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THE EARTH AS A WHOLE

NEW YORK CITY EDITION

THE EARTH AS A WHOLE

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TARR AND McMURRY GEOGRAPHIES

SECOND PART

THE EARTH AS A WHOLE

BY

RALPH S. TARR, B.S., F.G.S.A.

PROFESSOR OF DYNAMIC GEOLOGY AND PHYSICAL GEOGRAPHY
AT CORNELL UNIVERSITY

AND

FRANK M. McMURRY, PH.D.

PROFESSOR OF THEORY AND PRACTICE OF TEACHING AT TEACHERS
COLLEGE, COLUMBIA UNIVERSITY

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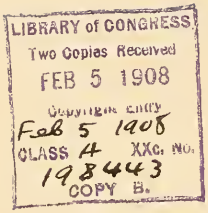
NEW YORK CITY EDITION
ENLARGED TO COVER GRADES 4 B, 5 A, AND 5 B

New York
THE MACMILLAN COMPANY
1908



New York City Edition. Published February, 1908.

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Part II

THE EARTH AS A WHOLE

I. FORM AND SIZE OF THE EARTH[1]

Its Form. — Hundreds of years ago, before America was discovered, men thought the earth was flat. They travelled so little that they had no idea of its form or of its size.

A few men who had studied the matter believed that the earth was a round ball, and that if one travelled straight on in any direction, he would in time return to the place from which he started. You can understand this by pushing your finger around on the outside of an orange, until it comes back to the starting-point.

Christopher Columbus believed this, and went to Spain, hoping to obtain money to secure ships for a long voyage to prove it.

Men were at that time in the habit of going to a land called India, for spices, silks, and jewels. To reach India from Spain they travelled thousands of miles *eastward;* but Columbus said that if the earth were round, like a ball, India might be reached by going *westward* across the ocean, and the distance would be much less. He therefore asked the king of Spain for ships and men to make such a journey.

The king refused the request, because the idea seemed ridiculous; but the queen came to his aid, and, at last, on August 3, 1492, he

[1] The use of a globe in this study is very important. Small globes may be obtained from dealers in school supplies at a very slight cost.

sailed westward on a voyage from which many thought he would never return; but, after a journey of several weeks, land was reached on October 12th.

Thinking he had reached India, he called the natives Indians; but instead of that he had discovered Cuba and other islands near the coast of North America; a continent and large ocean still lay between him and India. These newly discovered lands became known as the *New World*, to distinguish them from the *Old World*, where all white men then lived.

Fig. 92.

Columbus landing in America and taking possession of it in the name of the king of Spain.

After Columbus returned in safety, other men dared to explore the New World. One of them, named Magellan, started to sail round the earth; and though he was killed when he had reached the Philippine Islands, his ships went on and completed the journey. Since then many people have made the voyage in various directions, and the earth has been studied so carefully that every one now knows it is round.

The great, round earth is also called the *globe* or *sphere*.

The reason that it does not seem round to us, is that we see so little of it at a time.

If you see very little of an orange, it will not look round either. To prove this, place upon an orange a piece of paper with a small hole in it, so that none of the surface is seen excepting that which shows through the hole. This part does not appear round, but flat.

If we could get far enough away from the earth to see a large part of it at once, as we are when looking at an orange, or at the moon, we would easily be able to observe its roundness (Fig. 93).

FIG. 93.
The sphere.

Size of the Earth. — Our sphere is so large that even the highest mountains, when compared to the whole earth, are no larger than a speck of dust when compared to an apple. Lofty mountains are rarely more than three or four miles high; but the *diameter* of the earth, or the distance from one side to the other, through the *centre of the earth*, is nearly eight thousand miles.

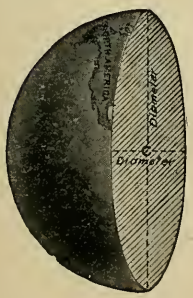

FIG. 94.
Figure of the earth cut in two, to show the diameter, the line passing through the centre (*c*).

The *circumference* of the earth, or the distance around the outside of it, is about twenty-five thousand miles. This is a little more than three times the diameter, and you will find that the circumference of any sphere is always a little more than three times its diameter. Prove this with an orange.

REVIEW QUESTIONS. — (1) What did people formerly know about the shape of the earth? (2) What is its form? (3) Tell the story of Columbus. (4) Why did he call the savages Indians? (5) Why was the land he discovered called the New World? (6) Tell about Magellan's voyage. (7) Explain why the earth does not appear to us to be a sphere. (8) What is the diameter of the earth? The circumference? (9) The latter is how many times the former?

SUGGESTIONS. — (1) Read something about the life of Columbus. (2) Read about Magellan. (3) Find the names of some other early explorers and read about them. (4) Trace Columbus's journey on a globe to see where he actually went. Find India in order to see where he thought he had gone, and notice how one can go to India by travelling eastward as well as westward. (5) Make a sphere in clay. Measure its diameter with a needle. (6) How many proofs can you find that the earth is round? Find out how we know that it is like a ball and not like a cylinder. (7) Write a story about Columbus. (8) Trace on a globe the route followed by our soldiers who went to the Philippines; of Admiral Dewey when he returned by way of the Mediterranean. How many days are required for such a journey? (9) Obtain a telescope or an opera glass and look through it at the moon.

For REFERENCES, see page 257.

II. DAILY MOTION OF THE EARTH, AND ITS RESULTS

The Axis and Poles. — The earth seems to us to be motionless, while *the sun appears to move* round it each day, rising in the east and setting in the west. But in reality neither of these things happens.

Instead of being without motion, the earth is turning round at a uniform rate of speed. You have perhaps watched a wheel spin about on a rod or pin, and have noticed that the outside goes rapidly, while the part near the pin moves much more slowly. It is the same with the earth; and just as we speak of the wheel turning upon a pin, so we speak of the earth turning upon its *axis*.

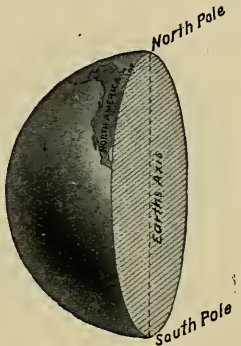

FIG. 95.
A drawing of the earth cut through to show the axis and poles.

But the axis of a wheel is something real, while the axis of the earth is merely *a line that we think of* as reaching through the earth's centre and extending to the surface in both directions.

The two ends of this axis are called the *poles of the earth*, one end being the *north pole*, the other the *south pole*.

Allowing an apple to represent the earth, a knitting needle or a stick pushed through its centre would represent its axis, and the two

ends on the surface, the two poles. You can then spin the apple, very much as the earth spins (Fig. 97).

If you were to go directly north from the place where you live, you would in time come to the north pole; or, if far enough south, to the south pole. Many men have tried to cross the icy seas (Fig. 100) that surround the north pole. If one ever reaches that point, he will not find a pole; but the north star, toward which the axis points, will be almost directly overhead.

The Equator. — Midway between these poles, we think of another line drawn around the earth on the outside. This is called the *equator*, because all parts of it are *equally* distant from each of the poles. On page 113 the distance around the earth was given; what, then, is the length of the equator?

FIG. 96.

A drawing of that half of the sphere containing the New World, — to show the position of the poles and the equator.

As the earth spins on its axis, all points on the surface must go with it, as every part of the skin of an apple turns with it. Since the earth makes one complete turn each day, a man at the equator travels twenty-five thousand miles every twenty-four hours. What a whirling motion that is! It is at the rate of over one thousand miles an hour, while the fastest trains run little more than sixty miles an hour.

Why do not places considerably north or south of the equator move as rapidly as those at the equator?

Gravity. — What, then, is to hinder our flying away from the earth, just as, when a stone is whirled about on a string, it flies away the moment the string breaks? And why is not all the water hurled from the ocean?

The reason is that the earth draws everything toward it. If you push a book from your desk, it falls to the floor; and when you spring into the air, you quickly return to the ground. All objects are drawn *downward*, because the earth is pulling upon them. It attracts them much as a horseshoe magnet attracts pieces of iron.

The force with which the earth draws all objects toward it is called *gravity;* and it is because of gravity that the water, trees, houses, and we ourselves, do not fly off when the earth is turning at such a tremendous speed.

Sunrise and Sunset. — The sun *seems* to rise in the east and set in the west. This could not be the case if the earth did not turn or *rotate* toward the east; for all heavenly bodies must first appear in the direction toward which the earth turns. This eastward rotation of the earth, therefore, explains why the sun seems to rise and set as it does.

Hundreds of years ago people thought that the sun actually rose, and, after moving across the heavens, set in the west. We still use the words "sunrise" and "sunset" which they used, although we know that the sun *appears* to rise only because the earth rotates.

Day and Night. — It is this rotation that causes day and night. A lamp can light only one-half of a ball at a time, as you know. So the sun can light only half of the great earth ball at one time. This being the case, if our globe stood perfectly still, there would always be day on the half next to the sun, and night on the other half.

But since the earth rotates, the place where it is day is constantly changing; and while the sun is setting for people far to the east of us, it is rising for those far to the west. When it is noon where you live, it is midnight on the other side of the earth. Thus each place has its

period of daylight and darkness; and as the earth makes one complete rotation every twenty-four hours, the day and night together must last just that length of time.

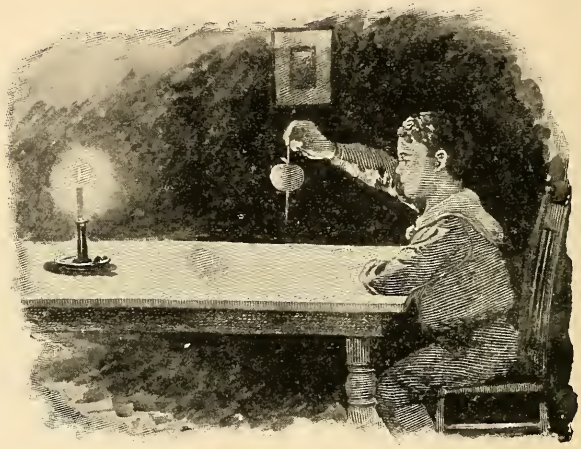

FIG. 97.

An apple lighted by a candle on one side, to illustrate the cause of day and night.

REVIEW QUESTIONS. — (1) What motion has the earth? (2) What is the axis of the earth? (3) The north pole? The south pole? (4) Represent the axis and poles by using an apple. (5) Walk toward the north pole. Toward the south pole. (6) What is the equator? (7) How long does it require for the earth to turn completely around once? (8) What rate of travel is that, for a point upon the equator? (9) Why are we not thrown away from the earth? (10) Give several examples showing what is meant by gravity. (11) In what direction is the earth rotating? (12) How does that explain sunrise and sunset? (13) What causes night? (14) What would be the result if the earth did not rotate? (15) When it is noon here, what time is it on the other side of the earth? (16) How long must the day and night together last? Why?

SUGGESTIONS. — (1) Point out the axis of a wheel; of a top; of a rotating ball; of a spinning globe. (2) Mark the two poles on an apple or ball, and then draw a line for the equator. (3) Mould a sphere in clay, and show the poles and the equator. Cut it in half, and mark a line for the axis. (4) Find exactly how many miles a point on the equator moves each hour. (5) Use a horseshoe magnet to attract pieces of iron. (6) Use a globe, or apple, and a lamp to show why the sun appears to rise and set, and why it is day on one side while it is night on the other. (7) Watch the stars in the east some night, to see which way they appear to move. (8) Why do not the clouds appear to move westward also? (9) Is the sun always shining during the day? Why, then, do we not always see it? (10) Who was Atlas? Who was Aurora? (11) Find out what the ancients supposed became of the sun each night. (12) When it is noon here, what time is it one-fourth of the distance around the earth to the east? To the west?

For REFERENCES, see page 258.

III. THE ZONES

Boundaries of the Zones. — The sun's rays feel warmer at noon than in the early evening because the sun is more nearly overhead at noon, and the rays then reach us nearly vertically.

FIG. 98.

A map of the zones. The colors suggest *sharp* differences between the zones on the two sides of the boundaries; but you should remember that the changes are *very gradual*.

For the same reason the sun seems hotter in summer than in winter, and in some parts of the earth than in others.

The hottest part of the earth is near the equator, for in that region the sun at midday is directly over the heads of the people. That is the case, for a part of the year, as far north as the line on the map (Fig. 98) marked *tropic of Cancer*, and as far south as the one marked *tropic of Capricorn*. Point to them on Figs. 119 and 120. These lines are more than three thousand miles apart, a distance greater than that across the United States from Boston to San Francisco; and over that vast area the heat is intense, or *torrid*. Those who live there wear only the very lightest clothing, and the savages have almost none (Fig. 99).

But further north and south the heat becomes less and

less intense, because the rays of the sun, even at noon, approach the earth at a greater slant. There is a region, then, on each side of this broad hot belt, where it is neither very hot nor very cold, but *temperate*.

Finally, near the poles, the rays are very slanting, as they are in our early morning or late afternoon. There it is so cold, or *frigid*, that the ground never thaws out, the ice never entirely disappears, and very little vegetation can grow.

Torrid Zone. — Thus one part of the earth has a hot climate. There the noonday sun is always so directly over the heads of the inhabitants that they never have winter.

This hot region extends entirely around the earth, like a great belt, and the equator is in the middle of it. This is called the *tropical belt*, or the *tropical* or *torrid zone*, and sometimes the *equatorial belt*. Why the latter name?

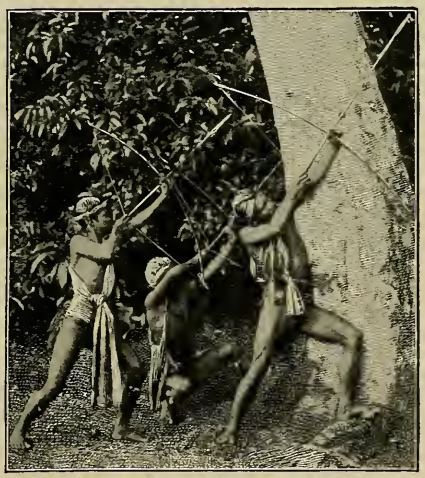

FIG. 99.

Philippine savages hunting; their home is in the torrid zone, and they need almost no clothing.

Temperate Zones. — On the north and south sides of this are the two temperate zones. People living in the *north temperate zone* find the sun to the south of them at noon, even in summer; and their shadows always

fall toward the north. But in the *south temperate zone* the midday sun is always in the north. Which way must the shadows fall in that zone?

Notice the position of the sun at midday where you live, and also the direction and length of your shadow at that time. In which of the temperate zones do you live?

Fig. 100.

Cape York Eskimos, Greenland, in their summer dress, standing by their sleds on the ice-covered sea.

Frigid Zones. — North of the north temperate zone, and south of the south temperate, are the *frigid zones*, where the sun is never high in the heavens, but even at midday is near the *horizon*. There the shadows are very long, as they are with us in the late afternoon. In consequence, while at the equator there is never any winter, near the poles there is never any real summer weather.

The northern of these zones is called the *north frigid*

zone (Fig. 100); the southern, the *south frigid zone*. They are also known as the *polar zones*, since they surround the poles.

It is so cold that no one has ever been able to reach either of the poles. These are surrounded by miles and miles of snow and ice, and vessels hundreds of miles away from them are in danger of being crushed by ice, or held by it so that they cannot move.

Hemispheres. — The half of our sphere north of the equator is called the *northern hemisphere* (or half sphere), the southern half, the *southern hemisphere*. The earth is also divided into halves by a circle running north and south through both poles, the western half, containing the New World, being called the *western hemisphere*, and the eastern half, containing the Old World, the *eastern hemisphere*.

Review Questions. — (1) What is the cause for the great heat in the torrid zone? (2) What are its boundaries? (3) What other zones are there? What are their boundaries? (4) In which direction does the midday sun lie in each zone? (5) In which direction do the shadows then fall? (6) Why should the heat grow less, the farther one travels from the equator? (7) Why has no one ever been able to reach either pole? (8) Which part of the earth has no cold weather? (9) Which part has no hot weather? (10) Point out the zones in Figure 98. (11) Represent them in a drawing of your own. (12) Name the hemispheres and tell where each is.

Suggestions. — (1) Find out more about the reason why the sun's rays are hotter when the sun is overhead than when it is low in the heavens. (2) Write a story telling about the changes in clothing you would need to make in passing from the north to the south pole. (3) In which direction would you look to see the sun at noon on such a journey? (4) How might the changes in heat affect the growth of trees and other plants? (5) How would the direction of your shadow change? Its length? (6) If there were no watches or clocks, how could you tell the time of day from the sun? (7) Find out about some of the men who have tried to reach the north pole. (8) In which zone should you prefer to live? Why? (9) Explain how some places in the temperate zone are warmer than some in the torrid zone.

For References, see page 258.

IV. HEAT WITHIN THE EARTH, AND ITS EFFECTS

Heat in Mines. — While much is known about the surface of the earth, very little is certain about its interior. The reason for this is that people cannot go far down below the surface in order to see what is there.

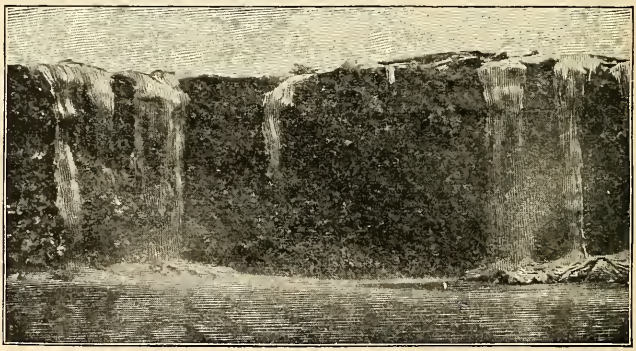

FIG. 101.

Melted rock, from a volcano in the Hawaiian Islands, flowing over the face of a precipice into the water.

In some places there are mines reaching fully a mile below the surface. This may seem a great depth; but when it is remembered that it would be necessary to go four thousand times as far to reach the centre, it is plain that this is really a short distance. A mile below the surface of the earth is not so much as the thickness of the skin of an apple, compared with the thickness of the apple itself.

In all of these mines, and in many deep wells, men find solid rock, usually covered at the surface with soil; but no one has ever gone beyond this rock.

It is interesting to note that the farther miners have dug down into the earth, the warmer they have found it. The thermometer rises about one degree for every fifty or sixty feet, and some mines, as they have been deepened, have become so hot that men could no longer work in them.

Melted Rock. — This has led to the belief that, if it were possible to go still deeper, the earth would be found to grow hotter and hotter, until, several miles below the surface, it might be hot enough to melt rocks.

Another fact leading to the same belief is that, in some regions, melted rock, called *lava*, actually flows out of the earth, and then cools to form solid rock (Fig. 101). In some places so much lava has flowed forth at different times, and collected about the opening called the *crater*, that a mountain peak has been built. Such peaks are called *volcanoes* (Fig. 102), and some of them are many thousand feet high.

FIG. 102.

Vesuvius, in Italy, sending out lava, ashes, and steam during an eruption some years ago.

The Earth's Crust. — From a study of the earth it seems certain that, although the outside is now cold, it was once hot, and that the mass within is still hot. It may be compared to a biscuit that is still hot inside, although its crust has become cool. In fact, this cold outside part of the earth is generally called the *earth's crust*.

Cause of Mountains. — It was stated on page 19 that some parts of the earth have been raised to form mountain

ranges, while others have been lowered to form valleys. We are now ready to explain how this has happened.

You have, perhaps, seen a blacksmith put a tire upon a wheel. He heats the tire so hot that it expands, and it is then easily placed over the wheel. But when the iron cools it shrinks, so that the tire then fits the wheel tightly.

Fig. 103.

An apple wrinkled through drying.

The hot interior of the earth is undergoing a similar change, since every year it is slowly growing cooler, and, therefore, shrinking or *contracting*. This allows the cool crust to settle; but, being too large, it wrinkles, or puckers, causing the rocks to bend and break, and forming great mountain ranges and valleys.

One sees something of the same kind in an apple that has become dry and wrinkled (Fig. 103). It has dried because some of the water beneath the tough skin has gone into the air as vapor; thus the inside has been made smaller. The skin of the apple, like the crust of the earth, has then settled down and become wrinkled.

Cause of Continents and Ocean Basins.—The mountains and valleys are not the largest wrinkles on the earth's surface. As the crust has settled, some portions have been lowered several miles further than others, and in these great depressions the waters have collected, forming the *oceans*, which in places are four or five miles deep.

Those great portions of the earth's crust which rise above the ocean are called *continents;* and the highest mountain peak upon them is fully eleven miles above the deepest part of the ocean.

Change in the Level of the Land.—The contracting of the earth has caused many changes, and is still causing them. Some parts of

the land have risen out of the ocean, and other parts have sunk beneath it. Perhaps the place where you live, even though it be among the mountains, was once below the ocean. This can be proved, in some places, by finding certain shells, called *fossils*, in the rocks.

Ages ago these shells were parts of animals living in the ocean; but on the death of their owners they became buried in the mud and lay there for centuries until the layers of mud became slowly hardened into rock. This was later lifted above the water, and then frost, rain, and rivers wore the upper layers away, bringing the fossils to light.

FIG. 104.
A rock containing many fossil shells.

We have already seen (p. 2) how rock is changing to soil and being washed from the land into the ocean. We now learn that this settles upon the ocean bottom, hardens into rock, and then, perhaps, is lifted into the air. These changes are very slow, but they are going on all the time. Places once inhabited by men are now beneath the sea, and others where they now live have risen above it.

REVIEW QUESTIONS. — (1) What is known about the temperature of the earth below the surface? (2) What does that suggest? (3) What other proof of this conclusion is there? (4) What is a volcano? (5) What is the crust of the earth? (6) What happens as the interior cools? (7) Compare this with the drying of an apple. (8) How have the ocean basins and continents been formed? (9) What do fossils in the rocks prove?

SUGGESTIONS. — (1) Collect pictures of volcanoes. Of earthquakes. Read about some volcanic eruption. (2) Make a drawing of a volcano. (3) Dry an apple and notice the change. (4) Not all rocks contain fossils; but examine those in your section to find if they do. (5) If you live near a beach, notice how shells are covered by the sands. (6) If a mine were a mile deep, what would be the temperature at the bottom, if the average temperature at the surface is 45°.

For REFERENCES, see page 258.

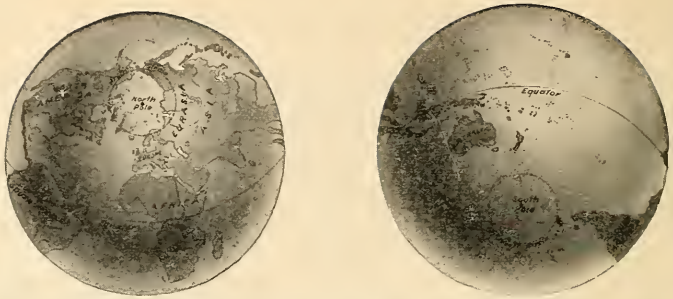

FIG. 105. — Land (on left-hand side) and water (on right-hand side) hemispheres. *Hemisphere* means half sphere; that is, half the earth.

V. THE CONTINENTS AND OCEANS

Land and Water. — The greater part of the land is found in the northern hemisphere, the greater part of the water in the southern (Figs. 106 and 112).

FIG. 106. — The northern hemisphere, showing the land about the north pole, Eurasia in the eastern hemisphere, and America in the western.

It is possible to divide the earth into halves, in one of which — the *land hemisphere* — nearly all the land is situated, while in the other — the *water hemisphere* — there is very little land. This is shown in Fig. 105.

The Continents

In Fig. 106, or, better, on a globe, notice that two great masses of land extend from the north polar zone. One of these lies in the western hemisphere, and is the land on which we live ; the other is in the eastern hemisphere.

North America. — The western land, which is better shown in Fig. 107, is broad near the north pole, and tapers down nearly to a point just north of the equator, having the form of a triangle. What is the name of this part?

Show where New York, Washington, and Chicago should be on this map. (See the map, Fig. 120.) Point also to your home. Find some rivers, mountains, peninsulas, gulfs, and other forms of land and water.

FIG. 107.
The half of the sphere containing the New World.

South America. — South of North America, and connected with it by a long neck of land, the Isthmus of Panama, lies the continent of *South America*. The two continents together are called the two Americas, forming the New World which Columbus discovered (p. 111). Notice how much alike they are in shape ; draw triangles to show this.

Through what zones does North America extend? (See Fig. 98, p. 120.) South America? Point to the places where there is snow all the time; to the part where there is never any snow. Where must the Eskimo girl, Agoonack, one of the Seven Little Sisters, have lived? Read about the Eskimos on page 192.

Tell how the climate would change if you were to travel from the northern end of North America to the southern end of South America. What changes would you expect to find in the plants? In the clothing of people? Write a story about such a journey.

On the opposite page are pictures of some of the wild animals of South America (Fig. 109). What wild animals live in North America? Collect pictures of them. Have you ever seen any of them?

Eurasia. — East of us, across the Atlantic Ocean, is the Old World (Figs. 108 and 113). More land is found

Fig. 108. — A hemisphere showing a part of Eurasia and Africa.

FIG. 109.

Some of the animals of South America.

there than in the New World, and the largest mass of it is called *Eurasia*.

The northern part of Eurasia is in the North Frigid zone, on the opposite side of the north pole from North America (Fig. 106), and extends a great distance east and west. Find for yourself how far south it reaches, and through what zones it passes.

Long ago, before Columbus made his voyage to the New World, the most civilized people lived in *Europe*, the western part of that great continent.

The homes of Jeannette and Louise, two of the Seven Little Sisters, were in that country. If you have read the story, can you not tell something about each of them?

Fig. 110.

The home of Jeannette among the Swiss mountains. Find other pictures of these mountains on pages 18 and 23.

The eastern part of the continent is called *Asia*.

Read in the "Seven Little Sisters" about Gemila, the child of the desert, and of Pen-se, the Chinese girl, whose homes were in Asia.

Europe is usually considered one continent and Asia another, although, as you can see from the maps, especially Fig. 106, they are not

so clearly separated as the other continents are. For this reason Europe and Asia are often called one continent, Eurasia, the name being made up of "Eur," from Europe, and "Asia."

Point toward this continent. Walk toward it. Which is probably its warmest part?

Africa. — South of Europe is the continent of Africa.

Here lived the little dark girl, Manenko, one of the Seven Sisters, and this is the place the negroes came from.

FIG. 111.

The tiger, one of the wild animals of Africa and Asia.

In what zones does Africa lie? How does it compare with South America in temperature? In shape? In what direction would you start in order to go directly to Africa?

Australia. — South of Asia are many large islands called the East India Islands (Fig. 120). Find the zone in which they lie. Southeast of these is a large island known as the continent of *Australia* (Fig. 119). In what zones is it?

The Oceans

The Arctic and Antarctic. — There seems to be a great deal of land; but, as we have learned (p. 63), three-fourths of the earth is covered by ocean water. The water around the north pole (Fig. 106) is called the *Arctic Ocean*. Find it on a globe.

There are many islands in this ocean, and the water between them is covered with ice. The climate is so cold that there are very few people, and no crops of any kind can be raised. Here the Eskimos live, hunting the polar bear, seal, and walrus to obtain meat for food, fur for clothing, and oil for fuel and light (see p. 192).

Much less is known about the *Antarctic Ocean* (Fig. 112), which surrounds the south pole, and in which there is also a great deal of floating ice.

The Atlantic. — Extending from the Arctic to the Antarctic is the *Atlantic Ocean*, having the Old World on the east and the New World on the west. This is the water that we cross in going to Europe, and many of the things we eat and wear are brought across it. Can you name some of them? Find what continents the Atlantic bathes.

The Pacific. — The water west of North America is called the *Pacific Ocean*, which is the largest of all oceans, occupying more than one-third of the earth's surface. What continents does it bathe? Walk toward it.

The Indian. — There is still another great body of water called the *Indian Ocean* (Fig. 108). It lies south of India in Asia, and between Africa on one side and Australia and the East Indies on the other.

The Ocean Bottom. — The depth of the ocean water varies considerably; on the average it is a little over two

FIG. 112.

The southern hemisphere, showing the water surrounding the south pole. Notice that the Antarctic is not separated by land from the other oceans.

FIG. 113.

The Atlantic Ocean.

FIG. 114.

The eastern part of the Pacific Ocean.

FIG. 115.

A part of the globe. What continents and oceans are shown ?

miles, but in some places it is more than four miles deep. In this immense body of water are millions of animals, some of them, as the whale, shark, codfish, and seal, being of use to man.

The bed of the ocean is mainly a great plain, where it is as dark as our darkest night, because the sunlight cannot pass through so much water. In consequence, the fish living there have little use for eyes, and some have none.

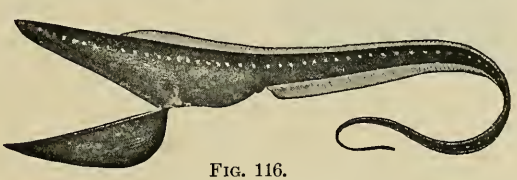

FIG. 116.
One of the deep-sea fish.

The mud which covers the bottom is in many places made up of the shells of tiny animals, many of them even smaller than a pinhead. Some of the chalk used in schools was just such mud before it was raised to form rock layers on the dry land.

Mountains in the Oceans. — While most of the bottom of the sea is a plain, some parts are not so level. Here and there are mountain peaks, and chains of islands, extending above the sea far away from the continents. Many of these are portions of mountain chains rising above the water; but many, like the Hawaiian Islands, are volcanoes which have been built up by lava flowing from the interior of the earth (p. 125).

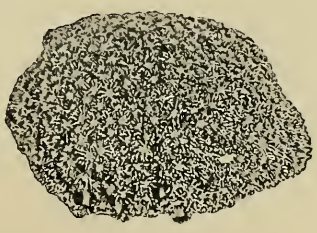

FIG. 117.
A piece of coral, with the polyps projecting from the hard coral like a bunch of flowers.

Coral Islands. — In the open ocean there is another interesting kind of island known as the *coral island* (Fig. 118). Some very tiny creatures, called *coral polyps*, build hard, limy coral, such as you have no doubt seen. Where the ocean water is warm, as in the torrid zone, these little animals live in immense numbers, millions of them around a single island.

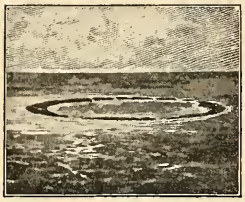

Fig. 118.
A ring-like coral island, called an *atoll*, in the open ocean.

Each polyp resembles a fully blossomed flower; and they vary greatly in color, being white, pink, purple, red, yellow, brown, and many other colors. It is a truly beautiful sight to see them spread out in the water, looking like a flower garden in the sea (Fig. 117).

When these coral animals die, the hard coral part remains. Then other polyps build upon these skeletons, and this is continued until the surface of the water is reached and coral islands are formed.

Review Questions. — (1) Name the five continents, counting Eurasia as one. (2) Write their names. (3) Walk toward each of them. (4) Tell what you can about each. (5) Where is the Arctic Ocean? The Antarctic? (6) Tell something about the people and animals of the Arctic region. (7) What oceans touch North America? (8) Name five oceans. Which is the largest? (9) What are the conditions on the ocean bottom? (10) In what ways are islands in the open ocean formed? (11) How are coral islands made?

Suggestions. — (1) Make an outline drawing of each of the continents. (2) Of each ocean. (3) Collect pictures of the animals, people, and scenery of the continents. (4) Write a story about one of the pictures. (5) Obtain pieces of coral for the school collection.

For References, see page 258.


North Pole
ARCTIC OCEAN
Greenland
NORTH AMERICA
ATLANTIC OCEAN
TROPIC OF CANCER
EQUATOR
PACIFIC OCEAN
SOUTH AMERICA
TROPIC OF CAPRICORN
ANTARCTIC CIRCLE
ANTARCTIC OCEAN
South Pole


North Pole
ARCTIC OCEAN
ARCTIC CIRCLE
EUROPE
ASIA
PACIFIC OCEAN
TROPIC OF CANCER
AFRICA
EQUATOR
INDIAN OCEAN
TROPIC OF CAPRICORN
AUSTRALIA
ATLANTIC OCEAN
ANTARCTIC CIRCLE
ANTARCTIC OCEAN
South Pole

FIG. 119.


THE WORLD
ON MERCATOR'S PROJECTION.
Scale of Miles along the Equator.
0 1000 2000 3000 4000 5000
Longitude East from Greenwich
Longitude West from Greenwich
Longitude East from Greenwich
C. Chelyuskin
ARCTIC OCEAN
Greenland
FRANZ JOSEF LAND
SPITZBERGEN
NOVA ZEMBLA
North Cape
ARCTIC CIRCLE
East Cape
ASIA
Bering Sea
C. Prince of Wales
ALASKA
Yukon
Mts.
Hudson Bay
Davis Strait
C. Farewell
DOMINION OF CANADA
NORTH AMERICA
Victoria
Ottawa
NEWFOUNDLAND
Halifax
Chicago
New York
San Francisco
UNITED STATES
Washington
ICELAND
BRITISH ISLES
London
North Sea
Berlin
St. Petersburg
Ural Mts.
EUROPE
ASIA
Paris
PYRENEES
Gibraltar
Mediterranean Sea
Constantinople
Himalaya Mts.
Alexandria
Cairo
Arabian Sea
Calcutta
Bay of Bengal
Pekin
JAPAN
Tokio
CHINA
Himalaya Mts.
TROPIC OF CANCER
Hongkong
PACIFIC OCEAN
ATLANTIC OCEAN
CUBA
PORTO RICO
HAWAIIAN ISLANDS
Manilla
PHILIPPINE ISLANDS
GUAM
Singapore
EQUATOR
C. Verde
AFRICA
EAST INDIA IS.
INDIAN OCEAN
BANDA
FIJI
TROPIC OF CAPRICORN
AUSTRALIA
Sydney
Melbourne
NEW ZEALAND
C. St. Roque
SOUTH AMERICA
Andes
Rio de Janeiro
Buenos Ayres
Cape Horn
Johannesburg
Cape Town
Cape of Good Hope
THE M-N. CO.

FIG. 120.

VI. MAPS

THE maps that have been thus far used are all hemispheres, and represent the earth as it would appear if we looked down upon it from above. Such maps are especially desirable because they call attention to the roundness of the earth; but they are so difficult to make that it is customary to represent the earth on flat maps instead.

In Fig. 119 you can see the difference between the two. While the lower ones show the roundness of the earth, the upper two represent it as quite flat. Although they are unlike, the latter show the position of the land and the water quite as plainly as the former. Since this is true, and since it is much easier to make the flat maps, these will be the ones chiefly used hereafter in this book. But in studying flat maps one should always remember to think of the earth as round, and not as a flat surface.[1] It should also be noticed that on flat maps it is impossible to show correctly both the shape and the size of countries. Compare Greenland and South America in Fig. 119 with the same countries in Fig. 120. If you should draw a picture on half of a toy balloon made of rubber, and then stretch the rubber flat, would the picture look the same? Examine Fig. 120 also.[2]

[1] The teacher should see that this is done by frequent use of a globe. It is advisable to have one large globe and several small ones, so that each pupil may have one for frequent use.

[2] These maps (Figs. 119 and 120) should be carefully studied, the pupil following map questions given by the teacher to cover form, location, etc., of continents, oceans, and important places.

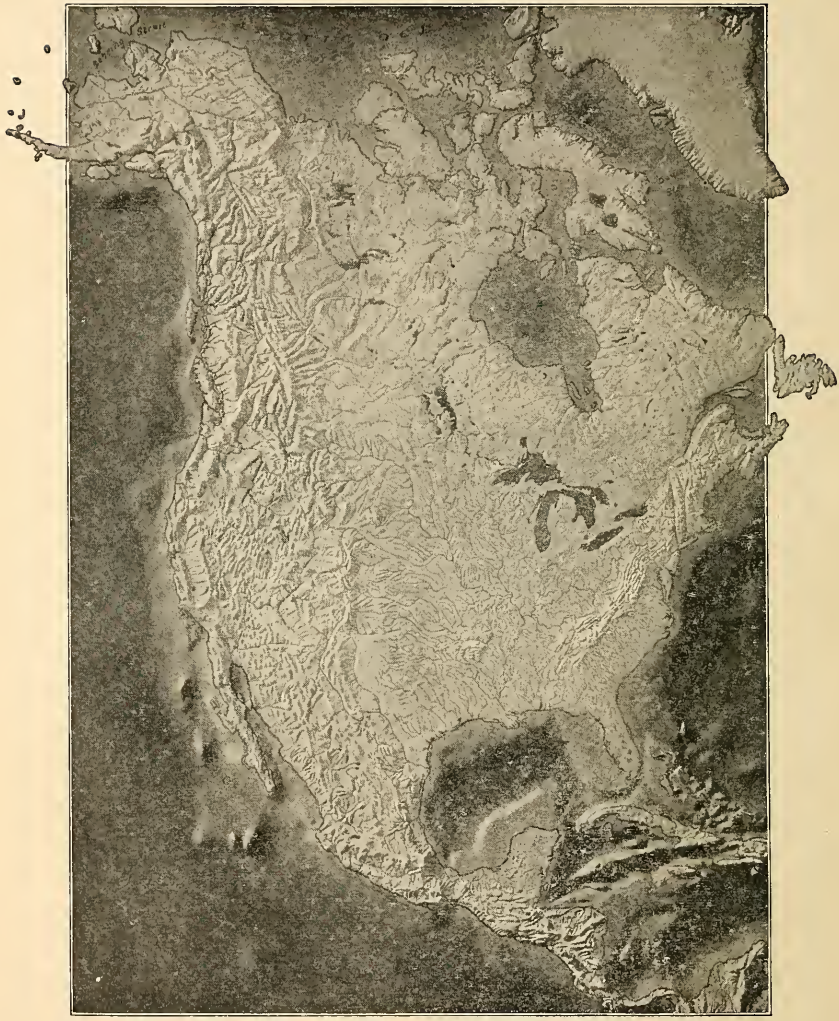

FIG. 121.

Relief map of North America.

(Modelled by E. E. Howell.)

VII. NORTH AMERICA

Physical Geography. — Here is a relief map of the continent on which we live. What great highland do you find in the west? In the east? In what direction does each extend? Which is the broader and higher? Where is the lowest land between these two highlands? Trace the Mississippi River. Name some of its largest tributaries. (You will find these rivers on the map, Fig. 123.) Find the Rio Grande River in the south, the St. Lawrence River in the northeast; the Yukon in the northwest. What two great rivers flow westward from the Rocky Mountains to the Pacific Ocean?

Notice the slope east of the Appalachian Mountains. Is it longer or shorter than that west of the Rockies? What, then, are the main slopes in North America? Upon which of these slopes do you live? Point as nearly as you can to the place where your home is.

Fig. 122.

Section across United States, from east to west, to show mountains, plains, and principal slopes.

Find New York and San Francisco on Fig. 123. If you were to go westward from the former to the latter, you would travel over many hills, valleys, and mountains. Some of the slopes would be short and gentle; others would be very long, and sometimes gentle, sometimes steep. Here is a drawing showing the chief slopes you would cross in making that journey. Point on Fig. 121 to the slopes *A*, *B*, *C*, *D*, *E*, and *F*, of the drawing. Draw a section like this.

Political Divisions. — You will remember that Spain was the nation that helped Columbus make his discovery of America. The Spaniards afterward settled in the southern part of the continent, and introduced the Spanish language there. That is still the chief language spoken in *Mexico*, in the southern part of North America. Mexico became independent of Spain many years ago.

Other nations also sent explorers and made settlements. Among these were the English, who settled chiefly along the Atlantic coast, and finally came to own the greater part of the continent north of Mexico.

In time the English who lived in the central portion of eastern North America waged war against England, and chose George Washington as their leader. On the 4th of July, 1776, they declared their independence of England, and finally won it completely. This part became known as the *United States;* but the region to the north, which England was able to keep, and which she still possesses, is called *Canada.* Find each of these countries on the map (Fig. 123). Point toward Canada and Mexico.

Besides these three large nations, several smaller ones occupy *Central America*, which lies south of Mexico.

Of course there must be some place where one country ends and another begins. Such a place is called a *boundary*, and the boundary lines between the different nations are shown on this map by heavy lines. Point them out.

In some parts you see that a *natural boundary* has been chosen, such as a river or a chain of lakes; but it is often only a straight line, cutting across rivers, lakes, and mountains. Examine the boundary of the United States to determine how much of it is natural.

Where the boundary is only a straight line, it is marked by a row of posts or stone pillars a few rods apart, and if you were to cross from one country to another you could easily see them.


NORTH AMERICA
Scale of Miles.
500
1000
Capitals: ⊙ Other Cities: •
Comparative Area
PENN.
45,215 Square Miles.
CANADA
UNITED STATES
MEXICO
CENTRAL AMERICA
SOUTH AMERICA
WEST INDIES
GREENLAND (To Denmark)
ICELAND (To Denmark)
ALASKA
NEWFOUNDLAND
LABRADOR
Hudson Bay
Baffin Bay
Davis Strait
Gulf of Mexico
Caribbean Sea
Lake Winnipeg
Great Bear Lake
Great Slave Lake
Lake Athabaska
Great Salt Lake
Lake Nicaragua
Panama Canal
Isthmus of Panama
Bermuda Is. (Br.)
Bahama Islands (Br.)
Jamaica (Br.)
Porto Rico (To U.S.)
Haiti
Yucatan Peninsula
Tropic of Cancer
Arctic Circle
Longitude West 90° from Greenwich 80°
THE M-N. CO

FIG. 123.


3
125°
120°
115°
110°
105°
Longitude 100° West
C. Flattery
Vancouver
Victoria
Seattle
Olympia
WASHINGTON
Tacoma
Mt. Rainier
Spokane
Portland
Columbia R.
Mt. Hood
Salem
OREGON
Cascade Mts.
Pacific Ocean
DOMINION
Regina
Missouri R.
MONTANA
Helena
Butte
Yellowstone R.
NORTH DAKOTA
Bismarck
IDAHO
Boise
Snake R.
YELLOWSTONE NATIONAL PARK
Deadwood
Pierre
Black Hills
SOUTH DAKOTA
Sioux
WYOMING
Rocky Mts.
Mt. Shasta
Sacramento Mts.
Coast Ranges
Great Salt Lake
Ogden
Salt Lake City
Wasatch Mts.
Cheyenne
NEBRASKA
Platte R.
NEVADA
Virginia
Carson City
Sacramento
San Francisco
Yosemite Valley
Sierra Nevada Mts.
CALIFORNIA
UTAH
Grand Jc.
Denver
Leadville
COLORADO
Pikes Peak
Pueblo
KANSAS
Arkansas R.
Mt. Whitney
Tulare L.
Grand Canyon
Colorado R.
Pt. Conception
Los Angeles
San Francisco Mt.
Santa Fé
Canadian R.
OKLAHO
Guthrie
ARIZONA
Albuquerque
San Diego
Phœnix
Gila R.
Tucson
NEW MEXICO
Pecos R.
Red
Brazos
TEXAS
Austin
Rio Grande
San Antonio
Gulf of California
LOWER CALIFORNIA
MEXICO
25°
30°
35°
40°
45°
115°
110°
105°
Longitude 100° West


Greenwich
90°
85°
80°
75°
70°
65°
CANADA
Lake of the Woods
L. Superior
Duluth
Sault Ste. Marie
MINN.
L. Michigan
L. Huron
Quebec
St. Lawrence R.
Montreal
Ottawa
Fredericton
MAINE
Augusta
MT. DESERT I.
Portland
Concord
Adirondack Mts.
Montpelier
VERMONT
WHITE MTS.
Saratoga Spgs.
Albany
Boston
C. Cod
Providence
Newport
MASS.
St. Paul
WISCONSIN
Toronto
L. Ontario
Rochester
NEW YORK
Catskill Mts.
Hartford
CONN.
Milwaukee
Grand Rapids
Lansing
Niagara Falls
Buffalo
Erie
Detroit
L. Erie
Madison
Chicago
Cleveland
PENNSYLVANIA
Harrisburg
Pittsburg
Trenton
New York
LONG I.
Philadelphia
Camden
Atlantic City
Des Moines
Ft. Wayne
Toledo
Peoria
OHIO
Wheeling
Baltimore
Annapolis
Del. R.
Springfield
INDIANA
Columbus
Washington
Kansas City
ILLINOIS
Indianapolis
Cincinnati
W. VIRGINIA
Charleston
Chesapeake Bay
Jefferson City
St. Louis
Evansville
Ohio R.
Frankfort
Louisville
KENTUCKY
Richmond
Petersburg
Norfolk
MISSOURI
Ozark Mts.
Cairo
Mammoth Cave
VIRGINIA
Raleigh
C. Hatteras
Nashville
TENNESSEE
Chattanooga
Cumberland R.
Appalachian Mts.
Mt. Mitchell
NORTH CAROLINA
Fort Smith
Memphis
Wilmington
ARKANSAS
Little Rock
Tennessee R.
SOUTH CAROLINA
Columbia
Savannah R.
Atlanta
Charleston
MISSISSIPPI
Vicksburg
Jackson
ALABAMA
Montgomery
GEORGIA
Savannah
Mississippi R.
Red R.
Yazoo R.
Chattahoochee R.
Alabama R.
LOUISIANA
Baton Rouge
Mobile
FLA.
Jacksonville
Tallahassee
St. Augustine
New Orleans
Galveston
Tampa
ATLANTIC OCEAN
GULF OF MEXICO
C. Sable
Key West
BAHAMA ISLANDS
Havana
CUBA
95° Greenwich
90°
85°
80°
75°
25°
30°
35°
40°
45°
UNITED STATES
Scale of Miles.
0 50 100 200 300
Capitals of Countries
Capitals of States
Other Cities
THE M.-N.CO.

VIII. THE UNITED STATES

Map Questions. — (1) What waters border the United States? (2) What countries? (3) What is the greatest distance across the United States, east and west? (Notice the scale of miles on the map.) North and south? (4) Where are the main divides? (5) Do you see any part that has very few streams? What does that suggest to you? (6) Find New York, Philadelphia, Boston, Baltimore, Washington, Chicago, New Orleans, St. Louis, Denver, and San Francisco, and tell where each is.

When our war for independence began there were thirteen large settlements, called *colonies*, which at the close of the war became known as *states*. Our flag still has its thirteen red and white stripes to remind us of them.

There were at first only thirteen stars in the blue field of the flag; but one has been added for each new state until now there are many more. Count the stars on a flag to see how many states there are.

For a long time after the war for independence, the interior and western parts of what is now the United States formed an unknown wilderness belonging to other nations, and inhabited chiefly by Indians. The United States has obtained part of this land by war, and part of it by purchase, so that the country is now several times as large as it was at first. Many large states have been added; but there are still some parts, called *territories*, which have not yet been made into states.

In order that they may be more easily studied, the states are usually divided into groups. Let us take first the northeastern group called the *New England States*; and afterwards, others.

IX. NEW ENGLAND

Map Questions. — (1) Name the six states included in New England. (2) Which is largest? (3) Which smallest? (4) Which has no seacoast? (5) What mountains are found in these states? What rivers? (6) Remembering what was said on pages 66 and 90, where would you expect to find the largest cities? (7) What is the capital of each state? (8) Point to Cambridge in Massachusetts, where Longfellow lived. (9) To Boston. Walk toward Boston. (10) In what direction would one sail from there to reach England? (See Fig. 120.)

Fig. 126.

A view of Boston, the largest city in New England, showing its harbor and some of the ships in it.

Names. — The settlers who came to this part of North America called it New England. Several names on the map also commence with *New*, as New Hampshire and New Haven. Find others. What reason can you give for their using that word so often?

Seaports. — If you examine the map you will notice that the coast is very irregular, with many small bays, promon-


74°
72° Longitude West 70° from Greenwich 68°
47°
45°
43°
41°
Quebec
St. Lawrence R.
QUEBEC
Chaudiere R.
Lake St. Peter
Montreal
R. Richelieu
Lake Champlain
St. Albans
Burlington
Montpelier
Green Mts.
VERMONT
Lake Champlain
Rutland
Connecticut R.
Mt. Washington
White Mts.
NEW HAMPSHIRE
Androscoggin R.
Kennebec R.
Penobscot R.
Auburn
Lewiston
Bath
Portland
Biddeford
Rochester
Dover
Concord
Portsmouth
Manchester
Merrimac R.
Nashua
Lawrence
Lowell
Salem
C. Ann
Gloucester
Massachusetts Bay
Cambridge
Lynn
Boston
MASSACHUSETTS
Worcester
Holyoke
Springfield
Troy
Brattleboro
Keene
Albany
Hudson R.
Plymouth
Cape Cod Bay
C. Cod
Pawtucket
Providence
Fall River
Hartford
CONNECTICUT
Waterbury
New Haven
Bridgeport
RHODE ISLAND
Newport
New Bedford
NANTUCKET I.
MARTHAS VINEYARD I.
BLOCK I.
Long Island Sound
Montauk Pt.
LONG ISLAND
New York Bay
New York
ATLANTIC OCEAN
NEW BRUNSWICK
St. John R.
Houlton
Mt. Katahdin
Moosehead Lake
Schoodic Lake
St. Croix R.
Calais
Eastport
Bangor
Augusta
Bar Harbor
MT. DESERT I.
Rockland
NEW ENGLAND STATES
Scale of Miles.
0 10 20 30 40 50 100
Capitals ⊙ Other Cities •
THE M-N. CO.

Fig 125

tories, and fine harbors. Draw the coast-line, showing some of these.

The excellent harbors have determined the places where great cities should grow up. The largest of all is BOSTON, and two others are PORTLAND and PROVIDENCE. Point them out. What direction is each from the others, and in what state is each?

Fishing. — Some of the towns are located on the coast because the men who live in them are fishermen, and must have their homes near the water. In the early days, cod, mackerel, and halibut were easily caught near the shore; but now it is often necessary to sail far from land, the men being gone perhaps for weeks before filling their vessels (Fig. 67, p. 73) with fish.

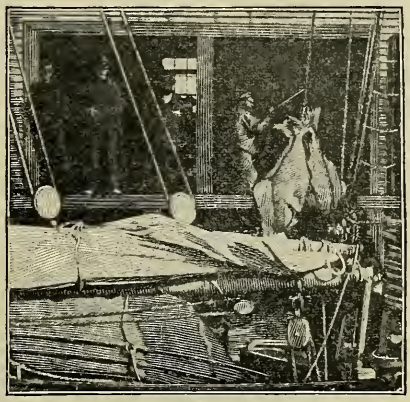

FIG. 127.

Fishermen hoisting halibut from a fishing vessel at Gloucester. Notice that these fish are as large as a man.

PORTLAND, BOSTON, and GLOUCESTER[1] are important fish markets, the latter being the largest fishing port in the country. Fish is sent from there to all parts of the United States, and even to foreign countries.

Farming. — A fine harbor by itself cannot make a great city. As you remember (p. 59), this is important simply because it renders the loading and unloading of vessels both easy and safe. But unless there were many people supplying and needing materials, there would be little need of using these harbors.

[1] Whenever cities, rivers, etc., are mentioned in the text, the pupils should be required to locate them on the map, giving state and position.

Let us see, then, if there are many people living farther inland and what they do.

One might expect that there would be much farming here; but there are so many hills and mountains, and the soil is often so thin and stony, that the farms are usually small, supplying only vegetables, milk, butter, and other products to be used in the cities near by. Some of them, far from the cities, have been abandoned because the land is so hilly and the soil so poor.

FIG. 128.

Lumbermen engaged in floating logs down-stream from the forest.

Quarrying. — But while the rocky hills and mountains hinder farming, they often furnish excellent *granite*, which is used for buildings and street pavements. White *marble*, used in monuments, is also found among the mountains near RUTLAND, Vermont; and *slate*, for roofs of houses, and for writing slates, is obtained both in Vermont and Maine.

Lumbering. — Since many of the hills and mountains are still covered with forests, much lumber is obtained from them, especially from the mountainous part of northern Maine. As you can see from the map (Fig. 125),

there are very few towns in this section, most of the country being wooded.

During spring freshets, when the winter snows are melting, the logs are floated down-stream, often to a place where ocean steamers can reach them. Here they are sawed into lumber and loaded upon vessels to be carried in all directions. BANGOR, on the Penobscot River, has become a large city, chiefly because of its lumber industry. Other towns on the Kennebec and the Androscoggin rivers have grown in the same way.

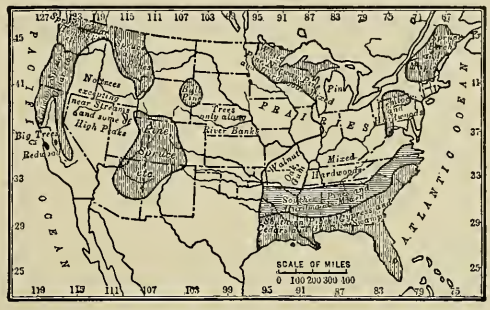

FIG. 129.

Map showing the regions from which considerable timber is now being obtained.

FIG 130

Lumber ships loading boards from the great piles that can be seen on the wharf. Here are also many logs ready to go to the saw-mill to be made into boards.

Manufacturing. — But we have not yet come to the most important occupation of the New England people. The short rivers, having their sources in the uplands, flow with swift course to the sea, and are often interrupted by rapids and falls. In one way this is a disadvantage, because vessels cannot go far up-stream; but in another way it is a great advantage. Can you see how?

On page 50 you learned that streams with swift currents and waterfalls furnish the best water-power. Where such power is abundant, wheels can be turned and great factories be run. This makes it clear why the chief in-

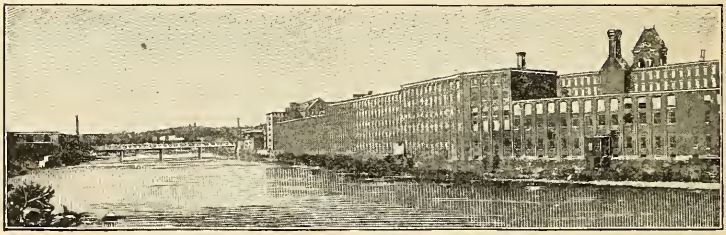

FIG. 131.

Great cotton-mills on the Merrimac River at Manchester, New Hampshire.

dustry of New England is manufacturing. In fact, the New England states are among the most important manufacturing states in the Union.

The principal rivers that furnish water-power are the Merrimac, Connecticut, and the three in Maine already mentioned (p. 145). Find each of these, and trace its course from source to mouth. Make a drawing to represent each one, and locate upon it some of the large cities.

There is so much manufacturing in New England, by the use of water-power and steam, that shiploads of cotton

are sent there to be made into cloth at such cities as MANCHESTER (Fig. 131), LOWELL, NEW BEDFORD, and FALL RIVER. Great quantities of wool are brought to be made into woollen goods at LAWRENCE and PROVIDENCE, which also manufacture cotton goods ; and thousands of hides of cattle and other animals to be made into boots, shoes, gloves, and leather of all kinds at LYNN and other cities. Iron and other metals are also brought to be made into knives, needles, watches, firearms, machines, and hundreds of other articles at WORCESTER, BRIDGEPORT, SPRINGFIELD, NEW HAVEN, and HARTFORD. In Boston itself there is also a vast amount of manufacturing of different kinds.

Find each of these cities; tell in what state it is and upon what river, if the name is given on the map. All of the other cities marked on the map are also engaged in some kind of manufacturing. Perhaps the shoes or some of the clothing that you wear were made in one of these places.

Commerce. — Some of the manufactured articles are shipped to all parts of the United States, and even to other countries. It is to a considerable extent this immense amount of manufacturing that furnishes employment to the people along the coast, and has caused the large cities to grow about the best harbors.

Not only do the persons living in the interior produce great quantities of goods to be shipped away, but they require others to be shipped in. Much of their food and also the cotton, wool, and hides must be brought to them. The amount of shipping is therefore very great, and this is one of the chief reasons why BOSTON, PORTLAND, and PROVIDENCE have become large cities. To the first two goods are sent by rail from the far West to be shipped abroad.

Review Questions. — (1) Why is it an advantage to New England that its coast is so irregular? (2) Mention some of the larger seaports. (3) Name the principal fishing port in the country. (4) Tell what you can about the farming. (5) What kinds of stone are found, and for what are they used? Where are they found? (6) Describe the lumbering. Which state produces the most lumber? (7) Explain how the lumber trade has determined the location of Bangor. On what river is it situated? (8) Why cannot vessels go far up the New England rivers? (9) How are the rivers useful for manufacturing? Name several that furnish water-power. (10) What goods are manufactured there? In what cities? (11) What articles must be shipped to this section? Why? (12) Tell how such commerce affects the size of the coast cities.

Suggestions. — (1) What stories of New England do you know? (2) Read about the Puritans. (3) Go into a fish store to see a codfish, mackerel, halibut, etc. (4) Examine some granite so that you will know it the next time you see it. (5) Find a monument made of white marble. (6) Find a house whose roof is covered with slate. (7) Start a collection for the school by bringing specimens of useful stones. (8) Try to find out more about lumbering in Maine. Hunt for pictures illustrating this work. (9) Start a school collection of pictures from magazines, etc. (10) How many articles can you mention that are made of wood? (11) Get some friend to take you through some kind of a factory, and tell the class what you saw. (12) Draw a sketch-map of New England, locating the rivers, capital cities, and principal towns.

For References, see page 259.


MIDDLE ATLANTIC STATES
81° Longitude West 77° from Greenwich 73°
Scale of Miles.
0 25 50 75 100 200
Capitals of Countries:
Capitals of States:
Other Cities:
Canals:
Quebec
Montreal
Ottawa
Ottawa River
St. Lawrence River
Georgian Bay
LAKE HURON
ONTARIO
LAKE ONTARIO
LAKE ERIE
Toronto
Rochester
Oswego
Watertown
Ogdensburg
Lake Champlain
Adirondack Mountains
Montpelier
VERMONT
Connecticut R.
Saratoga Springs
Troy
Albany
Hudson R.
Catskill Mountains
Poughkeepsie
Hartford
CONN.
MASS.
Newburgh
Long Island Sound
LONG ISL.
NEW YORK
Brooklyn
New York Bay
Paterson
Jersey City
Newark
NEW JERSEY
Trenton
Camden
Wilmington
Philadelphia
Reading
Lancaster
Harrisburg
Altoona
Pittsburg
Allegheny
PENNSYLVANIA
Williamsport
Susquehanna R.
Scranton
Wilkes Barre
Delaware R.
Binghamton
Elmira
Chautauqua L.
Jamestown
Erie
Buffalo
Niagara Falls
Lockport
ERIE CANAL
WELLAND CANAL
Dunkirk
Syracuse
Utica
Auburn
Ithaca
Little Falls
Amsterdam
Schenectady
Cohoes
Detroit
St. Clair
Niagara R.
MICH.
Cleveland
Youngstown
Allegheny R.
OHIO
Zanesville
Wheeling
Columbus
Cumberland
Baltimore
MARYLAND
Annapolis
Potomac R.
Washington
Alexandria
D.C.
Dover
DEL.
Cape May
Delaware Bay
Parkersburg
WEST VIRGINIA
Ohio R.
Kanawha R.
Charleston
Huntington
Big Sandy R.
KY.
Cumberland Mts.
Allegheny Mts.
Blue Ridge
Shenandoah R.
VIRGINIA
James R.
Richmond
Roanoke
Lynchburg
Petersburg
Cape Charles
Cape Henry
Norfolk
Portsmouth
Danville
Roanoke R.
Appalachian
TENN.
NORTH CAROLINA
ATLANTIC OCEAN
THE M-N. CO.

Fig. 132.

X. MIDDLE ATLANTIC STATES

Map Questions. — (1) Which of the Middle Atlantic states border on the Atlantic Ocean? (2) Which does not? (3) Which is smallest? (4) How does Pennsylvania compare in size with New England? (You will find the scale on each map.) (5) Name the chief rivers and tell where they are. (6) Which state extends farthest east? Which farthest west? (7) What natural boundaries do you find between them? (What are the names of the mountain ranges? (9) Which state has no mountains?

The Coast-line. — Observe that, as in New England, the coast-line of the Middle Atlantic states is very irregular. At three places the sinking of the land has caused the ocean water to reach far into the land, forming Chesapeake, Delaware, and New York bays. Find each; also draw the coast-line to show these bays.

The Seaports. — The largest cities in New England were found along the coast on bays similar to these, though smaller. The same is true here. New York, on the last-named bay, is the largest city in the United States and next to the largest in the world. Southwest of it is Philadelphia on the Delaware, just as far up the river as large ocean vessels can go. Farther south, near the head of Chesapeake Bay, is a third great city, named Baltimore, in the state of Maryland.

Reasons for the Great Size of New York City

Cities near by. — Near New York harbor we find not only New York, but Jersey City, Newark, and Brooklyn,

which has lately become a part of GREATER NEW YORK. Other cities like PATERSON are not far away. That is, not only one, but several great cities have grown up here very near together. Let us see why more people should have crowded together here than in any other part of the New World.

One reason is that from New York harbor, where hundreds of vessels may enter at one time, goods can be shipped over the Atlantic Ocean to various parts of the world.

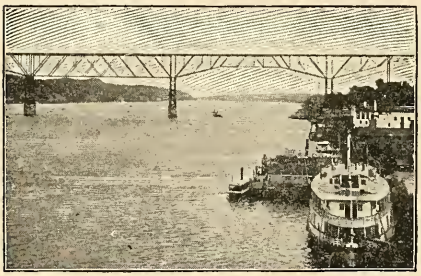

FIG. 133.

The broad Hudson River at Poughkeepsie, where a railway bridge crosses it.

Water-route to the Interior. — A second reason is that goods may also be shipped westward by water. Looking at the map, you see that New York Bay is at the mouth of the Hudson River. The sinking of the land has caused the ocean water to enter this river, and thereby to make it so broad and deep that large vessels can ascend it as far as ALBANY.

A few miles from Albany the Mohawk River enters the Hudson from the west, having its source far over toward SYRACUSE.

Long ago people saw that if they could construct a water-way from the Hudson River to BUFFALO, they could go by water all the way from New York to Buffalo; and then, since the Great Lakes are connected with one another, they could go all the way to the western end of Lake Superior. Use the scale of the map (Fig. 124)

to find how many miles that is. Through what lakes would the route lead?

The scheme was finally carried out by building the *Erie Canal* from BUFFALO, on Lake Erie, to the Mohawk Valley, then down that valley to ALBANY. (See map, Fig. 132.)

As the Western country became settled, more and more goods were shipped to and from New York. When railways began to be built many of them also led there. In this way New York has become a great city, and the chief shipping-point for a large part of the United States. Let us see what some of the goods are that are sent to New York.

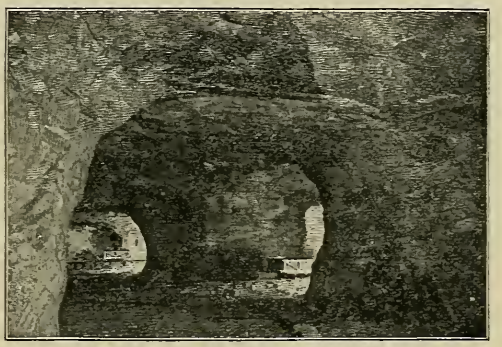

FIG. 134.

In a salt mine, a thousand feet beneath the surface, in central New York. The walls and sides of these tunnels are glistening white salt.

Lumbering. — On the map (Fig. 132) you will find the Adirondack Mountains north of the Mohawk, and the Catskill Mountains south of it. Among these there are still forests, as in Maine, so that lumbering is an important industry there.

Farming. — These mountains do not cover all of the state; most of it is more level, and has a rich soil upon it. Farming is therefore much more important than in New England. Besides butter and cheese, considerable hay and grain are produced, and an abundance of fruit, such as apples, pears, peaches, plums, and grapes.

Salt. — An extensive bed of salt is found deep down in the earth, in the central part of the state. Salt is taken from it in many places, and it was the important salt industry that determined the location, and much of the early growth, of SYRACUSE.

Manufacturing. — Again, in this state, as in New England there are many streams with waterfalls. Manufacturing has therefore become extensive.

FIG. 135.

Niagara Falls, the greatest cataract in the world (160 feet high).

In ROCHESTER, at the falls of the Genesee River (Fig. 75, p. 85), are many flour mills. The cities on the Mohawk are also engaged in manufacturing. What are their names? In BUFFALO, the second city in size in New York State, much use is made of power from the Niagara Falls, twenty miles away. TROY, near ALBANY, makes shirts, collars, and cuffs. These cities, as you see, are situated along the water-route already mentioned. Why? What others do you find along this route?

In NEW YORK CITY itself there is a vast amount of manufacturing, steam being used for power. In fact, in many places, even where there is water-power, factories now often use steam; but when the manufacturing began, people could not use steam because they did not know how, and the first manufacturing towns were built where there was water-power.

Commerce. — So much manufacturing, together with the farming and other industries of the state, helps to explain the great amount of commerce. People are continually sending goods to New York and receiving others in exchange. It should be remembered, too, that cities hundreds of miles farther west, in the neighborhood of the Great Lakes, are connected with New York by water and rail, and are engaged in trade with it.

From this it is plain why the largest city in America is situated where it is, and why other cities have grown up about New York harbor.

Reasons why Philadelphia has become a Great City

Cities near by. — Philadelphia, like New York, has other important cities near by. Directly across the Delaware is Camden in New Jersey; and to the northeast, also in New Jersey, is Trenton, where a clay is found that is made into dishes and earthenware. To the southwest is Wilmington in Delaware, where many ships and railway cars are built.

Farming. — The soil and climate in this neighborhood are well adapted to growing such fruits as peaches, pears, apples, grapes, and berries. On this account there are many factories for canning fruit in some of these cities.

To the northwest of Philadelphia are the Appalachian Mountains. Note the direction in which they extend across the state. The valleys among the mountains, and the plateaus and lowlands east and west of them, are fertile enough for good farming, especially wheat raising, sheep raising, and dairying; but lumbering is still carried on among the mountains.

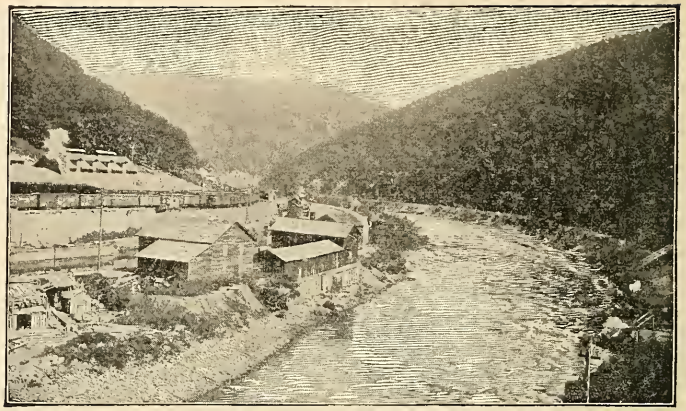

Fig. 136.

The forest-covered slopes of the Appalachian Mountains in Pennsylvania, at Mauch Chunk.

Iron. — Several substances found beneath the soil in Pennsylvania are its most important products.

In the first place, a great amount of iron ore is found there. When dug out of the ground this often resembles reddish earth, and it never looks exactly like iron; but by melting the ore, iron is obtained from it, and is then shipped to many places to be made into stoves, engines, guns, ships, knives, and a thousand other things. Pittsburg and Allegheny are noted for such manufacturing; also Reading and Harrisburg, the capital, as well as Philadelphia and its neighboring cities. See how long a list you can make of articles made of iron and steel.

Coal. — It requires an immense amount of fuel to produce the heat necessary to obtain iron from the ore and to make it into the many articles mentioned. Fortunately great quantities of coal are also found in this state, soft

FIG. 137.

In a Pennsylvania coal mine, where the walls are black instead of white as in the salt mine (Fig. 134).

coal being mined in the western part near PITTSBURG and ALLEGHENY, and hard or *anthracite* coal in the eastern part near SCRANTON and WILKES BARRE.

Much coal is needed for stoves and furnaces in houses, and also for producing steam for factories. There is, therefore, a great demand for it, and every year it is shipped by thousands of car-loads to New York, Philadelphia, and elsewhere, often to be loaded upon ships to be sent to Boston and many other cities.

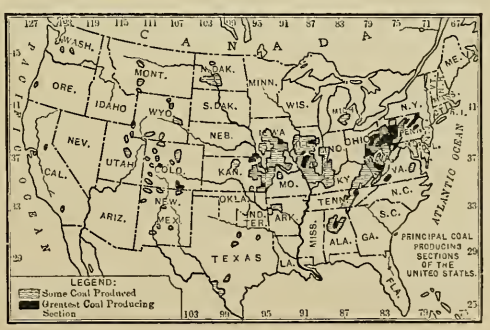

FIG. 138.

Oil and Gas. — Gas, much like that used in lighting

houses, and *petroleum*, the oil from which kerosene is made, are also found beneath the soil in the western part of Pennsylvania and New York. There is so much gas in some places that it is burned as a fuel in manufacturing glass and other articles, as at Pittsburg and elsewhere.

Commerce. — The products of Pennsylvania, New Jersey, and Delaware, principally fruit, grain, lumber, iron, coal, gas, and oil, together with the manufacture of iron goods, have helped to make Philadelphia a great city. As in the case of New York, many of these substances are sent to Philadelphia to be manufactured; and, like New York, Philadelphia is one of the great manufacturing cities of the country. Many other materials are sent there to be shipped away by water; and many ship-loads of goods, for people living in other cities farther west, are unloaded at Philadelphia.

Other Cities

Baltimore. — Baltimore has grown in much the same way. Its harbor is excellent, and both coal and iron can easily reach it from Pennsylvania. Like Philadelphia, Boston, and New York, it has an important commerce and much manufacturing.

Oysters abound in the shallow waters of Chesapeake Bay, and are shipped from Norfolk, Annapolis, and Baltimore.

Washington. — Another large city in this section is Washington, on the Potomac River in the District of Columbia. Although large vessels are able to reach it, it owes its importance not to commerce, but to the fact that it is the *National Capital*, where there are many great government buildings (Fig. 85, p. 99), and thousands of men and women employed in the service of the government. Can you describe some of the work which they are required to do?

Virginia and West Virginia. — RICHMOND, on the James River, is the capital and most important city of Virginia, the state in which Washington and Jefferson lived. The western part of the state is mountainous, as is the eastern part of West Virginia, the mountains furnishing lumber and iron. Also in West Virginia, as in Pennsylvania, there is a great amount of coal, oil, and gas. This leads to extensive manufacturing, especially at WHEELING, on the Ohio River.

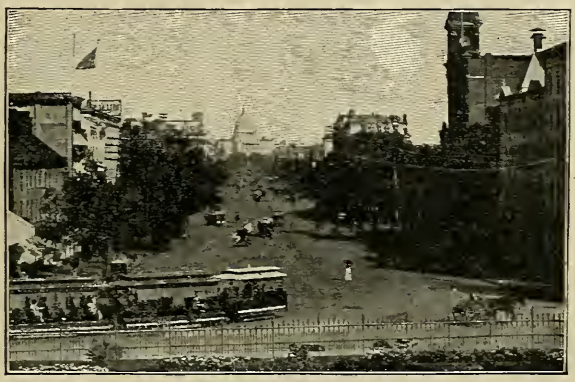

FIG. 139.

A picture of Pennsylvania Avenue in Washington, with the National Capitol building standing at the farther end.

Farming is the chief work in Virginia. The climate is so mild that tobacco can be raised much more profitably than in the states farther north. The tobacco plant, which white men found the Indians smoking, has a large leaf that is picked and dried, and then made into cigars and other forms in which tobacco is used. Factories are needed for such work, and they represent one of the main industries of RICHMOND, which is a great tobacco market, as Gloucester is a great fish market.

REVIEW QUESTIONS. — (1) Name the chief seaports. Walk toward each as you name it. (2) What reasons can you give for the great size of New York City? (3) Make a drawing of the Hudson and Mohawk rivers. (4) What cities do you find on the Erie Canal? (5) What can you say about the farming in New York State? (6) Where is the salt found? (7) What about manufacturing in New York? (8) What are the chief farm products near Philadelphia and Wilmington? (9) Why is iron manufacture so important in Pennsylvania? (10) Tell why Philadelphia has become a great city. (11) Where are Pittsburg, Allegheny, Scranton, and Wilkes Barre? (12) For what is Baltimore noted? (13) Washington? (14) For what industry is Richmond noted? (15) Where are Richmond and Wheeling? (16) In which state is each of the cities mentioned?

SUGGESTIONS. — (1) Make a list of all the cities named. (2) Are any of them not situated either upon the seashore, on rivers, or lakes? (3) Which is farther north, Buffalo or Boston? (See Fig. 124, opposite p. 141.) (4) Find what some of the chief difficulties are in building canals. (5) Examine some iron ore and add it to the school collection. (6) Visit a factory where iron goods are manufactured. (7) Why does Buffalo promise to be a growing city? (8) Why have Pittsburg and Allegheny a good location? (9) Give two reasons why Wilmington is a good place for shipbuilding. (10) Collect some pieces of anthracite or hard, and bituminous or soft, coal, and compare them. (11) Read the story of Rip Van Winkle. The mountains described are the Catskills. (12) Draw an outline map of these states and include the capitals. (13) Draw each of the states from memory. (14) Find out some facts about Washington, — its buildings, the people who live there, and what they do. (15) On the map (Fig. 124, opposite p. 141) the word Delaware is not spelled out because there is not room, but Del. is put in its place. All the states have abbreviations like this, which we use in writing letters. Find out the abbreviation for each state in this group and in New England. Also for the other states as you study about them.

For REFERENCES, see page 259.


105°
101°
97°
93°
37°
33°
29°
25°
Colorado Springs
Pueblo
COLORADO
KANSAS
Topeka
Kansas City
St. Louis
ILL.
MISSOURI
Missouri R.
Kansas R.
Arkansas R.
Rocky Mts.
Wichita
Springfield
Cimarron R.
Vinita
Ozark Mts.
Eureka Springs
White R.
Black R.
Guthrie
Kingfisher
Perry
Tahlequah
Canadian R.
OKLAHOMA
Oklahoma
Muscogee
Washita R.
Purcell
Fort Smith
ARKANSAS
McAlester
Little Rock
Helena
NEW MEXICO
Red R.
Tishomingo
Atoka
Hot Springs
Pine Bluff
Llano Estacado or Staked Plain
Ouachita R.
Sherman
Denison
Paris
Texarkana
Fort Worth
Dallas
Marshall
Shreveport
Monroe
Yazoo R.
MISS.
El Paso
Colorado
Corsicana
Tyler
Guadalupe Mts.
Pecos R.
Rio Grande R.
TEXAS
Waco
Trinity R.
Palestine
Sabine R.
Neches R.
Natchez
Alexandria
Mississippi R.
Lake Pontchartrain
Austin
Brenham
Port Arthur
Lake Charles
Baton Rouge
LOUISIANA
San Antonio
Houston
Galveston Bay
Galveston
Donaldsonville
New Orleans
Delta of the Mississippi
Nueces R.
Rio Grande R.
Corpus Christi
Laredo
GULF OF MEXICO
PADRE I.
Monterey
Saltillo
Matamoros
Brownsville
MEXICO
SOUTHERN STATES
WESTERN SECTION
Scale of Miles
0 50 100 200 300
Capitals of States ⊙ Other Cities •
Ciudad Victoria
Doctor Arroyo
Zacatecas
Longitude West from Greenwich
U.S. STATES ENGRG CO., N.Y.

FIG. 140.


SOUTHERN STATES
EASTERN SECTION
Scale of Miles
0 50 100 200 300
Capitals of States ⊙ Other Cities •
L.L. POATES ENGRG CO., N.Y.
89° Longitude West 85° from Greenwich 81°
Cincinnati
OHIO
WEST VIRGINIA
VIRGINIA
Richmond
Norfolk
ILLINOIS
INDIANA
KENTUCKY
Evansville
Louisville
St. Louis
Cairo
Nashville
TENNESSEE
Memphis
Clarksville
Knoxville
Bristol
Mt. Mitchell
Asheville
NORTH CAROLINA
Greensboro
Winston-Salem
Durham
Raleigh
Charlotte
Newbern
Wilmington
Cape Fear
Cape Hatteras
Pamlico Sd.
Jackson
Columbia
Chattanooga
Lookout Mt.
Florence
Decatur
Huntsville
Gainesville
SOUTH CAROLINA
Columbia
Greenville
Georgetown
Aberdeen
Columbus
Birmingham
Anniston
Rome
Atlanta
Athens
Augusta
Aiken
Charleston
Greenville
Tuscaloosa
Bessemer
Macon
ALABAMA
GEORGIA
Beaufort
Jackson
Selma
Montgomery
Columbus
Savannah
Vicksburg
Meridian
Enfaula
Americus
Natchez
Brunswick
Jekyl I.
St. Marys R.
Jacksonville
Baton Rouge
Mobile
Thomasville
Tallahassee
St. Augustine
Pontchartrain
Pensacola
New Orleans
Cape San Blas
Apalachee Bay
Palatka
Ocala
Delta of the Mississippi
Cape Canaveral
Tampa
Tampa Bay
GULF OF MEXICO
Lake Okechobee
The Everglades
Miami
BAHAMA IS.
Cape Sable
FLORIDA KEYS
Key West
Florida Strait
Havana
CUBA
ATLANTIC

FIG. 140.

XI. SOUTHERN STATES

Map Questions. — (1) Where are the mountains in this group of states? (2) Where are the plains? (See map, Fig. 140.) (3) Notice the direction in which the land slopes. (4) Name the gulf on the south side. (5) How is Texas separated from Mexico? (6) What large peninsula do you find on this map? (7) Which is the largest state? (8) How does it seem to compare with South Carolina in size? With Pennsylvania? (9) About how many miles is it by sea from New Orleans to Boston? (See map, Fig. 124, opposite p. 141.) (10) Notice how near these states are to the Tropic of Cancer. (See map, Fig. 123, opposite p. 140.) What does that tell you about their climate?

Relief. — The Appalachian Mountains extend into Alabama, passing across several of the Southern states. Name them. There are also some low mountains in western Arkansas and Missouri, and a portion of the Rocky Mountains in western Texas.

But this part of the country is mainly a great region of plains. Near the mountains, the plains are quite high above the sea; but near the coast there is a strip of low, level land known as the *coastal plains.*

Other low land is found along the Mississippi River, where there are broad flood-plains protected from the river floods by banks, called *levees.* Notice especially the Mississippi delta, and explain how it happens that the land projects so far into the gulf. (See pp. 46 and 47.)

We observe, then, that in this group of states are some mountains; between these and the coast are high plains or *plateaus;* then along the coast are low plains. Let us see what these three sections produce.

Coal and Iron. — Coal and iron are found among the Appalachian Mountains here, as in Pennsylvania. You would expect from this to find manufacturing centres near the mountains; and BIRMINGHAM, ATLANTA, CHATTANOOGA, and KNOXVILLE are engaged in manufacture. Find each, and tell what state it is in.

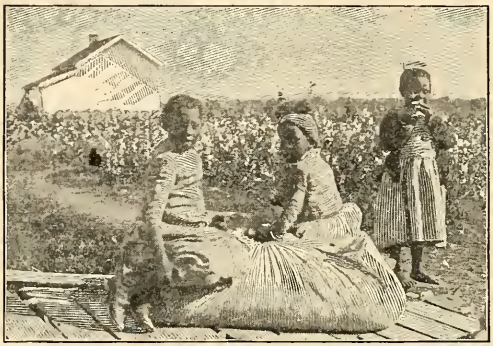

FIG. 141.

Negro children playing on a bag of cotton bolls, just picked. The white spots in the field are cotton bolls.

Cotton. — On the plains the soil is usually fertile, the climate is warm, and there is plenty of rain everywhere excepting in western Texas and Oklahoma. For these reasons farming is the chief occupation. The southern farms are commonly called *plantations*, and the principal crop on the higher plains, away from the coast, is cotton.

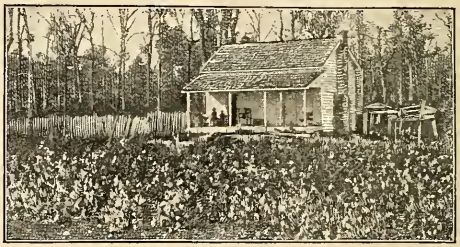

FIG. 142.

A small cotton-field and a negro home. The cotton bolls look like white flowers.

The cotton plant grows to a height of two to four feet. It has a white blossom, and after the flower is gone a small pod grows. This

pod enlarges until it ripens and bursts into a white ball, called the *cotton boll*, which looks somewhat like a milkweed pod after it has burst open.

The cotton bolls are picked in the autumn by men, women, and children, and then placed in a machine called the *cotton gin;* this removes the cotton seed, and also separates or combs out the threads of cotton. The cotton is then packed in bales, like hay, and shipped away to be made into thread, cotton cloth, and other goods. Name more of them. Name some of the cities in New England where this manufacturing is carried on. (See p. 147.)

Corn and wheat are also grown upon these higher plains, and tobacco, especially in the northern part of this section.

FIG. 143.

Great bunches of cattle feeding on the ranches of the arid plains of the west.

Ranching. — The drier plains of western Texas are covered with grass, which furnishes food for herds of horses, cattle, and sheep. The work of raising these animals is, therefore, one of the most important industries of this state. The section of land over which a man's cattle roam is not called a farm or plantation, but a *cattle ranch*, and the business is known as *ranching*.

Since a few men can look after several thousand horses, cattle, or sheep, few people are needed to carry on ranching. On that account there are not many towns in the western part of Texas, as you can see on the map. Many cattle are sent eastward from DALLAS by rail to be used as food.

Fig. 144.
Negro women cutting sugar-cane in Louisiana.

Sugar and Rice. — On the low, swampy plains near the coast and along the lower Mississippi River, rice and sugar-cane are raised. Rice seeds grow on a grasslike plant in wet soil. Sugar-cane looks much like corn; but the juice of the stalk is so sweet that it can be made into sugar and molasses.

Fig. 145.
A pineapple field in Florida.

Fruits. — Besides the crops mentioned, the low plain of Florida produces fruits. It is so far south that its climate is warm enough for oranges, lemons, and pineapples; probably your grocery store has such fruits from Florida and California.

Lumbering. — Some of these plains, both the high and the low ones, are still wooded. It is from them that the hard or *Georgia* pine, so often used in floors, is obtained. There are forests also in the mountains, so that there is an abundance of timber in this region. Which Northern

state already studied has a large amount of timber? In what section would you expect the climate to prevent the growth of forests?

Manufacturing. — Knowing what is produced in the Southern states, we naturally expect much manufacturing. There are coal, iron ore, corn, wheat, sugar-cane, cattle, sheep, cotton, and lumber, from each of which useful articles can be made. Tell what they are. There is also water-power in many places.

For a long time most of the manufacturing in the United States was done in New England. Great quantities of cotton and other *raw products* were sent there from the South to be manufactured. Then some of the finished articles were brought back for use in the South.

This condition has now greatly changed. The Southern states still ship much cotton to New England and Europe, but much is retained for manufacture at home. No other part of the country has shown so rapid progress in manufacturing as the Southern states. They are one of the greatest cotton-manufacturing regions in the world.

Near the coal fields important iron and steel manufacturing industries have arisen; near the forest regions are many lumber mills. The abundance of coal, iron, and lumber has made possible the manufacture of farm implements and other articles of iron and wood. Each year the importance of manufacturing in the South is rapidly increasing.

The variety of manufactures is far too great to list. Besides articles of iron, wood, and cotton, tobacco is made into many forms; wool into cloth and other woollen goods; hides into leather; cotton seed into cotton-seed oil; sugar-cane into sugar and molasses; the sap of the pine tree into turpentine, tar, and rosin.

New Orleans. — The principal cities in the South are those that have grown up at the best shipping points,

that is, on the ocean harbors, on the rivers, or on some of the great railways.

The greatest city in this entire section is NEW ORLEANS, in Louisiana, on the Mississippi River about one hundred miles from its mouth. It is almost as large as Pittsburg.

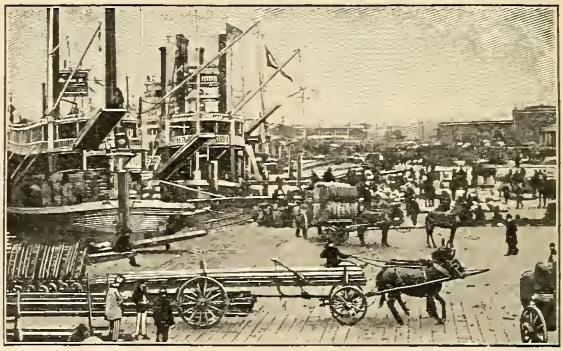

FIG. 146.

Loading and unloading goods on the levee at New Orleans. Notice the mules, one of the most common draft animals of the South.

Like New York it can be reached not only by railway, but also by vessels from across the Atlantic Ocean, and by others from distant inland cities. Ocean ships are able to pass up the river from the Gulf; and river boats can reach it from cities far up the Mississippi and its tributaries. Find some of these cities, such as Pittsburg and St. Louis (Fig. 124). Measure the distance from New Orleans to Pittsburg.

These facts help to explain why New Orleans is a great cotton-shipping port. Quantities of cotton-seed oil, sugar, molasses, and rice are also sent from there. Manufactured goods, as cloth and shoes, and foods, as meat and corn, are brought to this centre, and there distributed in all directions. Further up the river are VICKSBURG and MEMPHIS, which are important river ports.

Other Seaports. — Not many large cities are found on the Gulf coast. One reason is that the entrances to the harbors are often blocked by sand-bars. Also, since there are so few people and cities inland, there is no reason for having many great cities on the coast.

The largest seaport west of New Orleans is GALVESTON. What goods are probably shipped from this harbor? Remember the low coastal plains and the high dry plains to the west.

Along the coast east of New Orleans are MOBILE, a great cotton port, TAMPA, and PENSACOLA, a lumber port. Why lumber? On the Atlantic coast are JACKSONVILLE, the chief shipping port for Florida oranges, SAVANNAH, CHARLESTON, and WILMINGTON. Find each of these and tell what state it is in.

FIG. 147.
Some of the Indians who live in Indian Territory.

Oklahoma and Indian Territory. — A few years ago the section north of Texas, now called Indian Territory and Oklahoma, was known under the one name of Indian Territory, a place set aside by our government as a home for some of the tribes of Indians. But later, these Indians were collected in the part *now* called Indian Territory; then Oklahoma was opened up to white people for settlement. Now many thousands of white men are living in the *territory* of Oklahoma.

Climate. — The climate of the Southern states is so mild that many Northern people go South in winter to escape the cold. In the Southern part it rarely snows, and flowers are in blossom in midwinter. Do you know why the song-birds of the North go there in winter?

Review Questions. — (1) In which Southern and Northern states are the Appalachian Mountains found? (2) Tell what you can about the Southern plains. (3) Near what cities are coal and iron ore mined? (4) Name and describe the chief crop on the higher plains. (5) What is done with the cotton after it is picked? (6) What is the occupation of the people in western Texas? Why? Why so few towns there? (7) What two products are raised on the warm coastal plains and flood-plains? Describe each. (8) What fruits are raised in Florida? Why raised there? (9) What about the lumber industry? (10) Why should one expect to find much manufacturing there? (11) What kinds are there? (12) Why not more? (13) Why are there so few large cities? (14) Which is the largest of all? Why? (15) What goods reach this port? Why? (16) Name and locate the principal seaports. (17) Make a list of the Southern cities studied, and locate each. (18) Tell the direction of each from New Orleans. (19) Tell something about Indian Territory and Oklahoma.

Suggestions. — (1) Draw the coast-line of these states. Add the rivers, the state boundaries, and principal cities. Put in the capitals. (2) Represent the group in sand, showing the mountains and plains. (3) Examine some cotton. Make a collection of articles made from cotton and add them to the school collection. (4) Inquire of your groceryman where his oranges and other fruits were grown. (5) Examine some rice. (6) You can plant and grow not only wheat, but rice, cotton, sugar-cane, and other plants in the schoolroom, especially if you can induce some one who has a hothouse to allow you to start them there. (7) Why is not New Orleans as large as New York? (8) How are the people of New England and those of the Southern states dependent upon each other in the work that they do? (9) Beginning with the New England states, name those thus far studied that have mountains in them. (10) Name and locate the chief cities in all these states. (11) Draw the entire Eastern coast-line, and put in the larger cities and rivers.

For References, see page 259.


CENTRAL STATES
WESTERN SECTION
Scale of Miles
0 25 50 75 100 200
Longitude West from Greenwich
L.L. POATES ENGRG CO., N.Y.
DOMINION OF CANADA
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
NEBRASKA
IOWA
KANSAS
MISSOURI
ARKANSAS
OKLA
COLORADO
WISCONSIN
ILLINOIS
L. SUPERIOR
Lake of the Woods
Rainy Lake
Red Lake
Lake Itasca
Leech Lake
Mille Lacs
Turtle Mts.
Devils Lake
Grand Forks
Jamestown
Bismarck
Fargo
Grafton
Pembina
Winnipeg
Port Arthur
Pigeon R.
Tower
Duluth
Superior
Brainerd
Fergus Falls
Wahpeton
Aberdeen
Watertown
Pierre
Huron
Mitchell
Sioux Falls
Yankton
Lead
Deadwood
Black Hills
Minneapolis
St. Paul
St. Cloud
Stillwater
Red Wing
Faribault
Mankato
Winona
La Crosse
Madison
Mason City
Dubuque
Sioux City
Marshalltown
Cedar Rapids
Clinton
Davenport
Muscatine
Des Moines
Council Bluffs
Omaha
Norfolk
Fremont
North Platte
Grand Island
Kearney
Hastings
Lincoln
Plattsmouth
Nebraska City
Beatrice
Ottumwa
Burlington
Keokuk
Quincy
Hannibal
Chillicothe
St. Joseph
Atchison
Leavenworth
Kansas City
Topeka
Lawrence
Moberly
Alton
St. Louis
Sedalia
Jefferson City
Ottawa
Emporia
Hutchinson
Wichita
Arkansas City
Fort Scott
Nevada
Pittsburg
Parsons
Joplin
Springfield
Ozark Mts.
Missouri R.
Mississippi R.
Platte R.
Republican R.
Smoky Hill R.
Arkansas R.
Solomon R.
Kansas R.
Osage R.
Neosho R.
White R.
Cheyenne R.
Niobrara R.
Loup R.
Big Sioux R.
James R.
Des Moines R.
Cedar R.
Wisconsin R.
Illinois R.
Grand R.
Little Missouri R.
Minnesota R.
Red River of the North
Sheyenne R.
Chippewa R.
St. Croix R.
Rainy R.
Milwaukee
Springfield

FIG. 148.


CENTRAL STATES
EASTERN SECTION
Scale of Miles
0 25 50 75 100 200
Capitals of States ⊙ Other Cities ∘
DOMINION OF CANADA
L. Nepigon
Port Arthur
Pigeon R.
ISLE ROYALE
LAKE SUPERIOR
MINN.
Houghton
Calumet
Marquette
Superior
Ashland
Ishpeming
Mineral Range
Sault Ste. Marie
St. Marys R.
MICHIGAN
Menominee R.
Str. of Mackinac
MACKINAC I.
Cheboygan
Georgian Bay
LAKE HURON
Alpena
Chippewa R.
Marinette
Menominee
Green Bay
Wausau
Eau Claire
WISCONSIN
Green Bay
Manistee
Saginaw Bay
Toronto
L. ONT.
Appleton
Oshkosh
Lake Winnebago
Manitowoc
Sheboygan
Muskegon R.
West Bay City
Bay City
Saginaw
Winona
La Crosse
Fond du Lac
Port Huron
Wisconsin R.
Watertown
Milwaukee
Muskegon
Flint
Madison
Racine
Grand Rapids
Lansing
Lake St. Clair
St. Clair R.
Janesville
Battle Creek
Detroit
Ann Arbor
Dubuque
Rockford
Kalamazo
Jackson
Erie
Freeport
Evanston
Elgin
Oakpark
Chicago
Adrian
Detroit R.
LAKE ERIE
Cleveland
IOWA
Rock R.
Aurora
Joliet
Michigan City
South Bend
Goshen
Elkhart
Toledo
Youngstown
Davenport
Moline
Rock Island
La Salle
Hammond
Ottawa
Streator
Kankakee
Fort Wayne
Maumee R.
Sandusky
Akron
Findlay
Alliance
Massillon
Canton
East Liverpool
Lima
Mansfield
OHIO
Steubenville
Galesburg
Peoria
Lugansport
Marion
Bloomington
Lafayette
Muncie
Piqua
Columbus
Newark
Wheeling
Keokuk
ILLINOIS
Danville
Anderson
Springfield
Zanesville
Quincy
Springfield
Decatur
INDIANA
Richmond
Dayton
Scioto R.
Marietta
Hannibal
Jacksonville
Illinois R.
Indianapolis
Chillicothe
Parkersburg
Terre Haute
Hamilton
Cincinnati
WEST VIRGINIA
Kaskaskia R.
Wabash R.
Portsmouth
Ironton
St. Louis
Alton
East St. Louis
Covington
Newport
Ohio R.
Gr. Kanawha R.
Charleston
Belleville
Madison
Jeffersonville
New Albany
Frankfort
Big Sandy R.
Huntington
Evansville
Louisville
Lexington
Mississippi R.
Henderson
Owensboro
Kentucky R.
KENTUCKY
Ohio R.
Green R.
Mammoth Cave
Cairo
Paducah
Bowling Green
Middlesboro
Cumberland Mts.
VIRGINIA
New Madrid
Tennessee R.
Cumberland R.
Nashville
Knoxville
ARK.
TENNESSEE
N. CAR.
89° Longitude West from Greenwich 85°
89°
85°
81°
45°
41°
37°

FIG. 148.

XII. CENTRAL STATES

Map Questions. — (1) Name the states in this group. (2) Which ones border on the Great Lakes? How can goods be shipped from them by water to New York? (3) Name the Great Lakes. Which is highest above the level of the ocean? Which is lowest? (4) Into what do they empty? (See Fig. 123.) (5) What are the chief rivers in this group? (6) Into what do their waters empty? (See Fig. 124, opposite p. 141.) (7) Which states drain mainly into the Missouri River? (8) Into the Mississippi? (9) Into the Ohio? (10) Which one into the Great Lakes? (11) Find Chicago. Can you think of any reason why it should be a great city — the greatest in this section? (12) In which of these states did Abraham Lincoln live?

Raw Products. — This group of states has four cities larger than New Orleans, two that are almost as large, and several others that are not very much smaller. These facts tell us that there are many more people here than in the Southern states, and that the industries must be far more extensive. Let us see what they are.

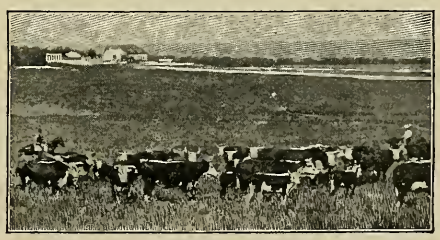

Fig. 149.
A "bunch" of cattle on a farm in western Kansas.

The entire section, as you see, is mainly a great plain, whose soil is favorable to farming.

In the western part of Kansas, Nebraska, and the two Dakotas this plain is dry, like the western part of Texas.

The reason for this is that the winds from the Pacific Ocean lose their moisture as they pass eastward over the mountains, while those from the Gulf of Mexico and Atlantic rarely reach so far as this region. On that account the men of this section, as in western Texas, are principally engaged in raising cattle (Fig. 156), sheep, and horses.

The eastern part of the states from North Dakota to Texas has more rain; and since the soil and climate are favorable, it is a great wheat region, the best in the entire country.

Fig. 150.

Harvesting wheat on one of the great wheat fields of the Red River Valley of North Dakota.

In Kentucky, as in Virginia, tobacco is one of the most important products; but in the Central states perhaps the most valuable farm crop is corn. A great deal of that grain is raised in every one of these states, although Iowa and Illinois produce the largest amounts. In many localities so much is raised that the cornfields extend as far as the eye can reach.

In all of these states there is much stock, each farmer usually keeping a few horses, cattle, sheep, or hogs. Each state, likewise, produces wheat and other kinds of grain, as well as wool, hay, fruit, vegetables, and other crops. Ohio is especially noted for its sheep and wheat.

Underneath the soil in several of the states, especially in Illinois, Ohio, and Indiana, coal is mined. Look on

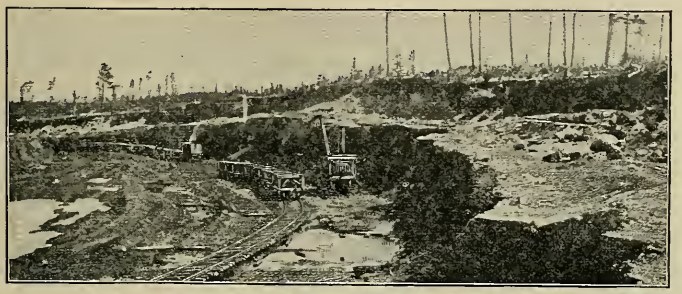

Fig. 151.

Iron mining in the famous Mesabi district of Minnesota, where they shovel out car-loads of the ore with great steam shovels, as gravel is often shovelled.

the map (p. 155) to see in what states coal occurs. In Ohio and Indiana, petroleum and natural gas are found.

On the northwestern shore of Lake Superior, in Minnesota, and also on the southern side, in Wisconsin and Michigan, iron ore is mined, as in Pennsylvania and Alabama. In fact, that region produces more iron ore than any other in the world. A great quantity of copper is also mined in Michigan.

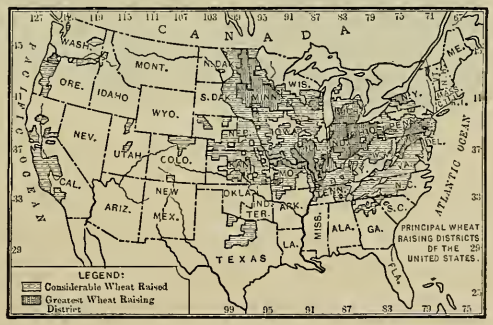

Fig. 152.

Make a list of the wheat-producing states.

The northern parts of Minnesota, Wisconsin, and Michigan also have large forests, so that many kinds of lumber are secured from them.

Now we know the principal raw products of the soil and mines of this region. We find cattle and sheep in the dry western section, wheat in the northwest and in Ohio, copper and iron ore along the shores of Lake Superior, lumber in the north, tobacco in the south, corn in the centre, and a vast amount of coal in several of the states. Many of the people of these states are engaged in obtaining these raw products.

FIG. 153.
Market Street in the great city of Chicago.

The Manufacturing and Trade Centres.— From this it is easy to see the reason for so many people and great cities in this region. The statement was made at the beginning of this section that four cities here were larger than New Orleans, and several others about as large. Where should they be located? Heretofore we have found the *great* cities where goods can be shipped by water; accordingly we would expect to find them either on the shores of the Great Lakes or along the Mississippi River and its tributaries.

Let us study about some of these cities, starting first with CHICAGO. It is next to New York in size, and is

situated on the southwestern end of Lake Michigan in Illinois. It has water connections with New York City, as you know, and also with the cities along the St. Lawrence River; for there is a canal leading from Lake Erie to Lake Ontario in order to avoid the Niagara Falls.

Aside from that, since Lake Michigan extends so far south, the railways from the Dakotas, Minnesota, Wisconsin, northern Iowa, and Illinois must swing around this southern end in going east and southeast. This makes that point a great railway centre.

FIG. 154.
Cattle in the Chicago stock-yards.

MILWAUKEE, farther north on the lake shore, is much smaller than Chicago, but it is one of the two cities nearly as large as New Orleans.

What, now, are likely to be the industries of these two cities and the others along the Great Lakes. Quantities of the raw products named are sent to Chicago. It is the greatest meat-market in the world; and cattle and sheep from the Western plains, and hogs from all over the Central states, are shipped to the Chicago stock-yards (Fig. 154),

where thousands of men are employed in preparing them for food. The business of packing, canning, and shipping the meat requires a great number of workmen, and the tanning of the hides to make leather, which is done in Milwaukee, also keeps many men busy.

Some of the wheat of the Dakotas and Minnesota is sent to Chicago and Milwaukee to be shipped or to be ground into flour for bread. The latter city has long been noted for its flour-mills. But there are also great flour-mills nearer the wheat fields. In southeastern Minnesota

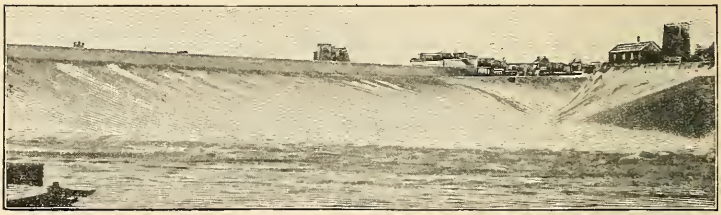

Fig. 155.

St. Anthony Falls, in the Mississippi, around which Minneapolis has grown. These falls furnish power for a number of great flour-mills.

are falls in the Mississippi River (Fig. 155) which furnish excellent water-power, so that flour-mills have been built there and the city of Minneapolis has grown up about them.

Only a few miles away, at the head of navigation on the Mississippi, is St. Paul, which owes its growth partly to the fact that it is a centre for the sale of machinery, clothing, and other articles needed by the farmers who raise the wheat. Name some of the articles they need to buy.

While much flour is made in the West, a great deal of the wheat is sent to Duluth, on the western end of Lake Superior, and there shipped over the Great Lakes, whence it goes to New York and even to Europe. Why should Duluth be selected?

Chicago has no water-power for manufacturing, but it is the nearest lake port to the Illinois coal-fields, and draws upon them for fuel to produce steam for factories. Thus it is made a great centre for the manufacture of iron goods and furniture, receiving both iron ore and lumber in lake vessels. But the other lake ports share in this work, especially the great cities of CLEVELAND, DETROIT, and TOLEDO, which are within easy reach of the raw products.

Another important product that reaches Chicago is corn. There it is ground into corn-meal or made into hominy, starch, and other substances. So much corn and wheat are carried there that Chicago is a great grain as well as meat market.

Locate the principal cities along the Great Lakes. Named in order of size they are Chicago, Cleveland, Detroit, Milwaukee, Toledo, and Duluth. In what state is each of these? Also find SAGINAW and GRAND RAPIDS, two important lumber-manufacturing cities.

We said that the other great cities should be looked for upon the water ways formed by the Mississippi River and its largest tributaries. The greatest of these tributaries is the Missouri River, and a very large city, ST. LOUIS, is situated near where it enters the Mississippi.

St. Louis is connected with the country far to the northwest by the Missouri River; with Minneapolis by the Mississippi; with Pittsburg by the Ohio; and on the south with Memphis, New Orleans, and the ocean. Naturally, as people settled here, railways were built, until, like Chicago, it has become one of the great railway centres in the country. Like Chicago, also, it draws to itself all the products that have been named.

Although a great many cattle and sheep reach St. Louis and Chicago, making them important meat-markets, many of these animals are slaughtered near the plains on which they are raised, and that

fact explains the importance of OMAHA and KANSAS CITY. Both these noted meat-markets are on the Missouri River. Horses and wool are also shipped from these cities.

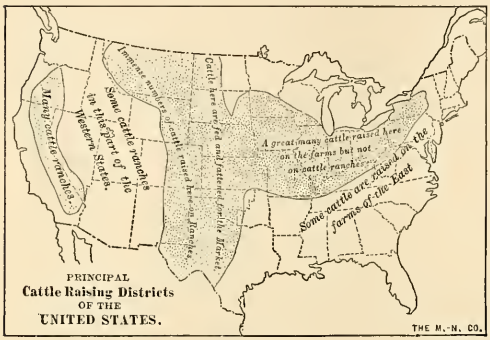

FIG. 156.

Much wheat and corn are brought to St. Louis, making it an important grain-market. A great deal of tobacco also goes to St. Louis; but since Kentucky is the chief tobacco raising state in the Mississippi Valley, its leading city, LOUISVILLE, is the great tobacco market of that section, as Richmond is for Virginia. It is also an important manufacturing centre.

The manufacture of clothing is an important industry in CINCINNATI on the Ohio River, and much machinery is made there from iron ore sent from Pennsylvania and West Virginia. Why from these states rather than from Lake Superior?

One of the largest cities in these Central states, INDIANAPOLIS, the capital and largest city in Indiana, is located away from the great waterways. But it is in a rich farming country, and as railways enter it from all directions, it has become the chief trade centre of that state. COLUMBUS, the capital of Ohio, is another great trade centre.

Locate the principal cities on the large rivers and tell for what they are important. Ranked in order of size they are, St. Louis, Cincinnati, Louisville, Minneapolis, Kansas City, and St. Paul. In which state is each of these?

Review and Comparisons. — We have seen that the farm products and manufactures of the Central states are quite different from those of the Southern states. Make a list of these for each of the groups and compare them. Compare them in the same way with those of New England. With those of the Middle Atlantic states. Explain, as well as you can, the causes for these differences.

Make a list of the six largest cities in each of these four groups of states. When in doubt as to whether one city is larger than another, look up the population in the tables on page 265. Add together the populations of each group of cities and compare the results.

Review Questions. — (1) Describe the surface of the Central states. (2) What four states are dry in the western part? Why? (3) Compare the products of these with those of western Texas. (4) Where is our greatest wheat region? (5) Where in this group of states are copper and iron ore mined? (6) Where is lumber found? (7) Tobacco? (8) Corn? (9) Coal? (10) For what products is Ohio noted? (11) Give some reasons why Chicago has become so great a city. (12) Also St. Louis. (13) Name and locate the chief cities along the Great Lakes, giving the main industries of each. (14) Do the same with the cities along the great rivers. (15) What was said about Indianapolis and Columbus?

Suggestions. — (1) Draw the Mississippi River with its two main tributaries. Add to the drawing the Great Lakes and the Atlantic and Gulf coasts. Make a cross where each of the large cities is located, and write its name. (2) Find your own home on this map and notice its direction and distance from some of the large cities. (3) Add some wheat and corn to the school collection. (4) Grow some of each in the school. (5) Tell from what animals wool, beef, pork, mutton, lard, and leather come. (6) Find out about the buffalo and Indians that used to live on the plains. (7) Read about the early French explorers. About the pioneers who first settled these plains. (8) According to the scale of the map (Fig. 124) how does Kansas compare in size with Connecticut? (9) With the whole of New England? (10) Estimate the entire length of the Mississippi River according to the scale on Fig. 124. (11) Draw a map of the Central states similar to that of New England, and put in the capitals.

For References, see page 259.

XIII. WESTERN STATES

Map Questions. — (1) In what directions do the mountains extend? (2) Name the principal ranges. (3) Which are the chief rivers? (4) Make a drawing of them. (5) In what sections do there seem to be few rivers? (6) What does that suggest about rainfall? (7) Some rivers empty into lakes that have no outlet. What does that suggest? (See p. 55.) (8) How far is it across the United States from the northern to the southern boundary? (9) Measure the length of California. Compare its size with Pennsylvania; with Texas; with Massachusetts. (10) Compare the coast-line with that of New England. What does that suggest about harbors and cities? (11) Where are Denver and San Francisco?

Reasons why there are so Few People. — This group of states is much larger than either of the other four, forming about one-third of the entire United States. But they are thinly settled, having only about one-fourth as many people as the Southern states alone. Two divisions, Arizona and New Mexico, are still territories, like Oklahoma, because they have so few inhabitants.

One reason they have so few people is that most of the early settlers came from Europe, and naturally located in the Eastern and Southern states. It was only after these parts were fairly well occupied that many people moved farther westward.

Another important reason is the mountainous condition of the country. Much of this section is a vast, dry plateau, usually more than a mile above the level of the sea. Extending across the plateau from north to south are


DOMINION OF CANADA
Vancouver
Bellingham
Everett
Seattle
Tacoma
Olympia
Spokane
WASHINGTON
Fort Townsend
C. Flattery
Str. de Juan de Fuca
Victoria
Vancouver I.
Puget Sound
Mt. Rainier
Astoria
Portland
Columbia R.
Snake R.
Lewiston
Wallace
Kalispell
Great Falls
Missoula
Helena
MONTANA
Milk R.
Missouri R.
N. DAK.
Anaconda
Butte
Bozeman
Billings
Miles City
Yellowstone R.
Powder R.
Big Horn R.
Bitter Root Mts.
The Dalles
Mt. Hood
Lagrande
Salem
Albany
Baker City
OREGON
Cascade Mts.
IDAHO
Rocky Mts.
YELLOWSTONE NATIONAL PARK
Buffalo
S. DAK.
Black Hills
Cheyenne R.
Little Missouri R.
Fremont Pk.
WYOMING
Ashland
Bolse
Owyhee R.
Snake R.
Pocatello
North Platte R.
NEB.
Mt. Shasta
Cape Mendocino
Eureka
Sacramento R.
Coast Ranges
Sierra Nevada Mts.
Bear L.
Logan
Rawlins
Laramie
Cheyenne
Great Salt Lake
Ogden
Evanston
Humboldt R.
Great Basin
Great Salt Lake Desert
Utah L.
Salt Lake City
Provo City
South Platte R.
Denver
Reno
Virginia City
Eureka
Sacramento
L. Tahoe
Carson City
Austin
UTAH
Wasatch Mts.
COLORADO
Leadville
Colorado Springs
Pikes Peak
Sevier Lake
Green R.
Grand R.
Cripple Creek
Pueblo
Arkansas R.
San Francisco
Oakland
Stockton
San Joaquin R.
NEVADA
Blanca Peak
Trinidad
San Jose
Coast Ranges
Fresno
Mt. Whitney
Durango
San Juan R.
Grand Canyon
Little Colorado R.
Santa Fe
Las Vegas
Albuquerque
Mohave Desert
Flagstaff
NEW MEXICO
Pt. Conception
Santa Barbara
Los Angeles
San Bernardino Range
Colorado R.
ARIZONA
Phoenix
Salt R.
Gila R.
Roswell
Silver City
Las Cruces
SANTA BARBARA ISLANDS
San Diego
Yuma
Tucson
Tombstone
El Paso
Rio Grande
TEXAS
PACIFIC OCEAN
LOWER CALIFORNIA
Gulf of California
MEXICO
WESTERN STATES
Scale of Miles.
0 50 100 200 300 400
State Capitals: ⊙ Other Cities: •
120° 115° Longitude West 110° from Greenwich 105°
50 45 40 35 30

FIG. 157.

several great mountain ranges. The mountains along the Pacific coast are called the *Coast Ranges*, those in eastern California the *Sierra Nevada*, and those farther north, in Oregon and Washington, the *Cascade Ranges*. Far east of these long chains are others called the *Rocky Mountains*. All of these mountains together are known as the *Western Cordilleras*.

The Cordilleras are far higher and steeper than the Appalachians in the East, and they are very rocky, so that farming is impossible on much of the land. Indeed, in many parts they are so rough that it is difficult to travel among them; this is indicated by the name Rocky Mountains.

FIG. 158.
A geyser in eruption in the Yellowstone National Park.

Still another reason why there are so few people is that, even where the soil is fertile, the climate is usually too dry for farming, because the winds that reach it do not carry much vapor.

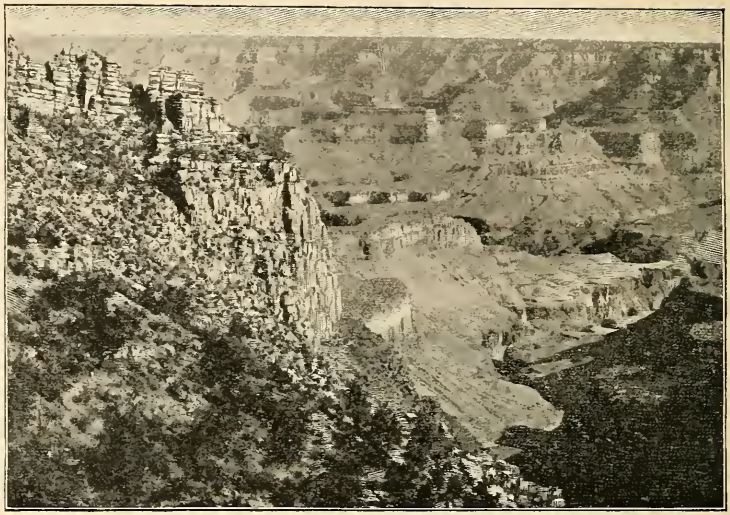

FIG. 159.

A view in the great Colorado Canyon, where the Colorado River flows in a deep gorge cut in the plateau to a depth of over a mile.

Wonderful Scenery. — Some of the places in this section are among the most interesting in the world. For example, in northwestern Wyoming are hundreds of springs where the water is so hot that it boils. At some points boiling water and steam occasionally shoot upward with a roar, from holes in the ground, and rise frequently to a height of one or two hundred feet. These are called *geysers* (Fig. 158), and there are scores of them in this region.

Here, too, is the Yellowstone River, whose waters tumble 308 feet in a single fall, which is nearly twice as high as the Niagara Falls in New York. In the deep gorge that the river has cut below the falls, the rocky banks are

in places fully one-fourth of a mile high and beautifully colored. Our nation has set aside this wonderful region as a park, naming it the *Yellowstone National Park;* and each year hundreds of people travel there to see it.

There are many other interesting places to visit in this western country; but none are more wonderful than the Colorado Canyon (Fig. 159), an immense river valley cut in the rocks of the plateau, in places to a depth of over a mile. Trace its course on the map.

Mining. — Although so rocky and so arid, there are some very important industries in the Western states; and in order to find out what they are, let us first study the mountains. You remember that iron ore and coal are found in the Appalachians; do you remember in what states? Some coal and iron ore are also mined in the Cordilleras; but even more valuable minerals than these are found in the mountain rocks.

In 1848 gold was discovered in California. Bits of this heavy metal lay in some of the stream beds, and could be obtained by carefully washing the lighter dirt away (Fig. 160). News of the discovery quickly spread throughout the world, and men hastened to the gold fields by thousands. Ever since then California has been one of the leading states in the production of gold.

FIG. 160.
Miners washing, or "panning," gravel to see if there is any gold in it.

There were no railways then in the West, so that some men from the East crossed the plains and mountains in wagons, in which they were in danger of being attacked by savage Indians; others made

the long journey in vessels. What route must they have taken? The best harbor on the Pacific coast was San Francisco Bay, where a small Spanish town had existed for years. Soon people crowded in so rapidly that the town of SAN FRANCISCO became a great city and the chief trade centre in the West.

The metal was also found under the soil in the midst of solid rock. Rock with gold in it is called gold *ore*, and must be crushed into fine bits before the gold can be collected. This requires much machinery, and is one of the important parts of mining (Fig. 22, p. 24). A great deal of this kind of ore is now mined in California.

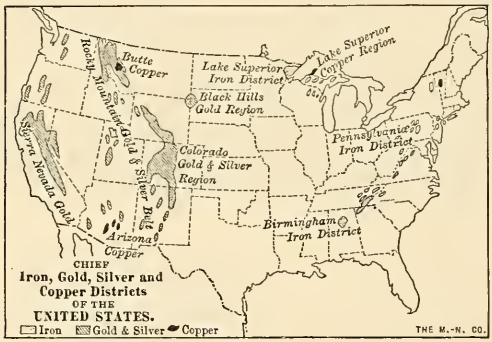

FIG. 161.

In what states is each found?

Gold is also found in Colorado, and many men have been attracted to that state, as formerly to California. Indeed more gold now comes from Colorado than from California. DENVER, the largest city in Colorado, and PUEBLO, owe their growth partly to the gold mines near them. Find these cities on the map.

Silver is another precious metal mined in the West, and Colorado produces more of it than any other state. Without doubt some of the gold and silver that you have seen came from the mountain rocks of California or Colorado. For what purposes are these metals used?

Large quantities of both metals are also mined in the other states and territories of this section, especially in the Black Hills of South Dakota, in Montana, Nevada, and Utah.

Much copper is mined in the West, especially at BUTTE, Montana, where the greatest copper mines in the world are situated, and in the territory of Arizona. Lead is a fourth important metal obtained from these Western states.

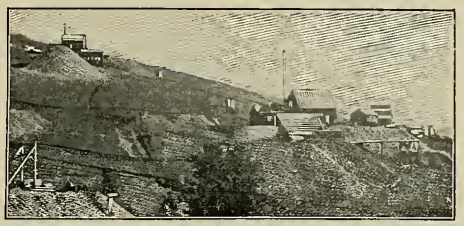

FIG. 162.

These piles of dirt and rock are the waste dumped aside by miners as they have dug into the earth for ore.

Cities have grown up near some of these mines; but there are many mines in the mountains far away from the cities. In some parts of the country travellers may see, from the car windows, scores of little tunnels dug into the sides of the mountains, by men who were hunting for ore. It is a hard, lonely life, and many find little ore; but one occasionally makes a discovery that brings him a fortune.

Ranching. — The mountains, therefore, are chiefly valuable for their ores; but the high plains and plateaus also have some worth. There is little rain upon them; but, as in the western part of the two Dakotas, Nebraska, Kansas, and Texas, there is often grass enough for raising cattle, sheep, and horses. Many of the animals raised are finally shipped eastward to furnish meat, leather, and wool. In these states the cowboys live, spending most of their days upon their horses.

Fig. 163.
A western cowboy.

The Desert. — In some parts of this dry, or *arid*, region there is so little rain that it is a true *desert*. One can travel for scores of miles and see scarcely any vegetation excepting cactus, a little grass, and such plants as grow in arid regions. There are no trees ; there is no water ; in fact, there is little but sand and rock to be seen ! No wonder that many a family, with their horses or oxen, died of thirst and hunger in attempting to cross this desert waste in search of California gold fifty years ago.

Irrigation. — However, by irrigation (see p. 48) parts of these deserts are changed into gardens. To irrigate the thirsty soil, which is usually fertile, men dig ditches and lead the water from streams that are fed by the rain and melting snow of the high mountains.

The Mormons of Utah, a people who were driven out of the Eastern states many years ago, and who settled in that barren region, have changed the desert to a garden by means of irrigation. They have also built the beautiful Salt Lake City near Salt Lake ; and not far away

from this is OGDEN, a busy railway centre, where there are not so many Mormons. Find these places on the map.

People living near the eastern base of the Rocky Mountains raise much of their food by the aid of irrigation. Near Denver is a great irrigation ditch leading from the mountains; and while the land just above the level of the ditch is fit for nothing but grazing, that below it, which can be flooded with the water, produces excellent crops.

FIG. 164.

The desert of Utah, near Great Salt Lake, where there is no fresh water, where it rarely rains, and where there is very little vegetation.

Irrigation is growing more common every year, and by the aid of it people often raise food for stock, as well as for themselves. They even build great reservoirs to collect the water for use in the summer (Fig. 49, p. 53); but most of this barren waste can never make good farm land, because there is not enough water.

Fruit Raising. — We have been studying the mountains, high plains, and plateaus, finding mining and grazing to be the chief industries, with farming where the soil is irrigated.

Let us now examine the land nearer the coast. Southern California also has an arid climate where farming cannot be carried on without irrigation. But since the climate of the region is warm, as in Florida, the fruits that grow in southern countries, such as oranges, lemons, peaches, olives, and figs, are easily raised.

FIG. 165.

An orange grove near Los Angeles in Southern California, the irrigation ditch being seen between the two rows of orange trees.

In the midst of this beautiful fruit country, where the climate is so fine, is the beautiful city of LOS ANGELES, an important railway centre, surrounded by thriving towns and orange groves (Fig. 165).

Everywhere in that vicinity the main work is fruit raising by aid of irrigation. Without it a piece of land produces no crops, while a well-irrigated orchard by its side thrives wonderfully well. Visitors are usually surprised to see such a striking difference.

Industries along the Pacific Coast. — Farther north, toward San Francisco and beyond it, the rainfall is heavier; but irrigation is necessary in many places. The most common fruits are grapes, plums, peaches, and apricots. Much wheat is also raised, and sheep are numerous. This is the country of "big trees," too, the largest in the world being found in the vast forests among the mountains.

Still farther north, between Oregon and Washington, you will find a large river on the map. What is its name? Here the moist winds from the ocean cause heavy rainfall, so that irrigation near the coast is unnecessary. On the mountain slopes are extensive forests, and there are large lumber mills, especially in Washington along Puget Sound. Find this sound (Fig. 124).

In this section there are many cattle and sheep ranches, and quantities of wheat are raised. The raising of such fruits as peaches and apples is also an important industry. Salmon are abundant in the Columbia River, so that the fishing industry is important there, as at Gloucester, Massachusetts. What kinds are caught there? (See p. 143.)

FIG. 166.

One of the "big trees." Notice that through a hole cut in the trunk a large wagon can be driven.

The Cities of the Pacific Slope. — The largest city north of San Francisco is PORTLAND, on a small branch of the Columbia River. It is situated about one hundred and twenty miles from the mouth of the Columbia, and can be reached by ocean vessels. The other cities are TACOMA and SEATTLE on Puget Sound, and SPOKANE, a manufacturing centre, at the falls in the Spokane River.

Comparing the Pacific with the Atlantic coast, one sees some striking differences. The Atlantic coast is low and extremely irregular, having many bays and fine harbors, with numerous great cities about them. But the Pacific coast has steep mountains in many places, and, except in the very north, is regular, having few fine harbors and large cities. San Francisco is the most important, being larger than New Orleans. Los Angeles is twenty-five miles away from the coast; but Portland, Tacoma, and Seattle are all seaports.

From the four coast cities and from Los Angeles, goods are shipped over the Pacific Ocean to Japan, China, Australia, and even around South America to the Atlantic coast. This is an important trade, but it is by no means so extensive as the ocean commerce of the Atlantic coast cities. The fact that we now control the Philippine and Hawaiian islands will cause this trade to increase; and when a ship canal connecting the Atlantic and Pacific oceans is finished, there will be still more ocean commerce. Why? A cable has recently been laid from San Francisco to Manila by way of Honolulu. Of what benefit is it?

At present the greater part of the products of the Western states, even of the coast cities, instead of being shipped by water, are sent eastward by rail. There are railway lines connecting each of the large Western cities with all portions of the Eastern states.

Review Questions. — (1) Compare the size of this group of states with that of the other groups. (2) What about the number of people there? (3) Give three reasons why there are so few. (4) Name each of the mountain ranges, finding each on the map, Fig. 124. (5) Tell what a visitor may see in the Yellowstone Park. Where is it? (6) Where is San Francisco? What caused its early rapid growth? (7) Where is Denver? Give a reason for its importance.

(8) What metals are obtained in the West? (9) Where is each found? (10) Tell what you can about each. (11) What is the principal industry on the high plains and plateaus? Why? (12) Why cannot the whole desert be irrigated? (13) What city have the Mormons built? Where is it? (14) Where is Los Angeles? (15) What is raised near there? Why? (16) What is raised in other parts of California? (17) Name the products of Oregon and Washington. (18) Where is the chief city in Oregon? Why there? (19) What are the chief cities in Washington? (20) Name the cities on the Pacific coast having excellent harbors. Name several on the Atlantic. (21) How do the two coasts differ? (22) Where are the products of the Pacific coast sent? How?

(23) Make a list of the principal cities studied in the United States. (24) In what direction is each from Chicago? (25) Make a map of the United States, placing on it each of the states with their names. Put on the map the names of the capitals. (26) Which states have a seacoast?

SUGGESTIONS. — (1) Write a story describing a journey across the plains and mountains to California in the early days. (2) Make a list of articles made of gold; of silver; of copper; of lead. Collect some ores of these for the school. (3) What stories have you read about the life of cowboys? About the Western Indians? (4) Find out something about the Yosemite Valley. (5) Ask a storekeeper what California fruits he keeps. Find out what products of your county are shipped to other states or countries. (6) Visit a fish-market to see some salmon. Find a picture of one in the dictionary. (7) Add together the population of the five largest cities on the Pacific coast. Compare that number with the population of the five largest on the Atlantic coast. You will find a table giving population of cities on page 265. (8) Make a drawing of the Pacific coast, showing the cities. Add the rivers. (9) Find out what large animals live among the mountains. (10) What is the distance from San Francisco to New York? (11) Past what cities must the waters of the Yellowstone River run, in flowing to the Gulf of Mexico? Through what states? (12) Ask the railroad agent in your town for illustrated circulars descriptive of western scenery, or write to San Francisco to the general offices of the different roads.

For REFERENCES, see page 260.

XIV. ALASKA

Alaska, which you see on the map (Fig. 123, opposite p. 140), although a part of the United States, is a great distance from us. Our country purchased this cold, barren land from Russia. It is so far north that it is partly in the arctic zone, and many people thought that our government wasted the $7,200,000 that was paid for it.

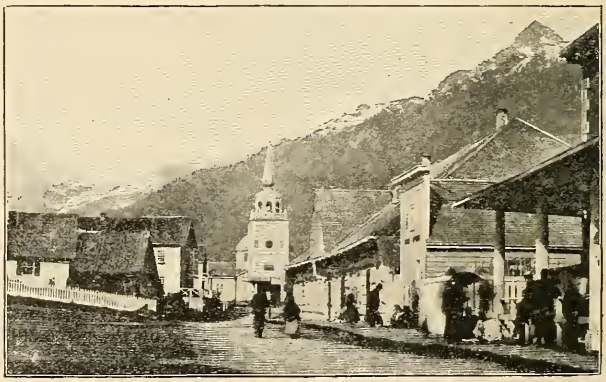

Fig. 167.

A street in Sitka, Alaska. Although it is summer, notice the snow on the mountains.

But Alaska has proved valuable in several ways. During the last few years thousands of men have gone there in search of gold, just as years ago thousands rushed to California. You have probably heard of the famous Klondike region, where so much gold has been found. The

Klondike is a stream flowing into the Yukon River just east of the boundary line between Alaska and Canada. Find it. The Klondike region itself is in Canada.

Much gold is also mined on the coast just north of SITKA, the capital of Alaska, and in other places as well. But the country is so far north that little food can be raised, and mining in many parts is not only difficult but dangerous.

Much sealskin for cloaks and caps comes from Alaska. A few hundred miles southwest of the mouth of the Yukon River are the small Pribilof Islands, to which thousands of seals come every spring to rear their young. Seal hunters are allowed by the government to capture some of these for their fur, which is warm and beautiful, but very expensive because the animals are not abundant.

FIG. 168.
Some of the fur-seal on the Pribilof Islands.

There are great forests in some parts of Alaska, and the fishing is good. Not only is Alaska valuable at present, but it will probably be even more valuable in the future.

REVIEW QUESTIONS.— (1) Where is Alaska? (2) In what zones? (3) How did we obtain it? (4) What is done there?

SUGGESTIONS.— (1) Draw the Yukon River. (2) Measure its length and compare it with that of the Mississippi. (3) How does the coast compare with that of California? Of Maine? (4) Read something about the fur-seal. Examine some fur. (5) Find out something about a journey to the Klondike.

For REFERENCES, see page 260.

XV. CANADA AND OTHER COUNTRIES NORTH OF THE UNITED STATES

Map Questions. — (1) How far are Detroit, Buffalo, and Chicago from Canada? (See map opposite p. 167.) (2) What Falls in the river which connects Lakes Ontario and Erie? (3) What effect have they upon shipping? (4) In what part of Canada would you expect to find most of the people? Why? (5) What large bay in northeastern Canada? (See map opposite p. 140.) (6) What can you say about the climate of the country north of this? (7) Which of the Great Lakes is entirely within the United States? (8) Into what large river do the Great Lakes empty?

Canada and Newfoundland

Industries. — Canada is a British colony; and Newfoundland and Labrador also belong to England, but are separate from Canada.

Much of this region is cold and bleak; but the southern part resembles the northern United States in climate and soil, so that the products on the two sides of the boundary may be expected to correspond.

Fishing was found to be an important industry along the New England coast (p. 143); so it is, also, in Nova Scotia and Newfoundland.

Maine in the East and Washington in the West are covered with vast forests. Forests extend into Canada, covering a large part of it, and in fact they reach northward for several hundred miles until the climate becomes so cold that trees can no longer grow.

New York and Ohio are noted for their fruit, dairying, and farming. Ontario, or that part of Canada just north of these states, has the same products.

The best wheat fields in the United States are in Minnesota and the two Dakotas; so Manitoba is the best wheat region in Canada. And since the dry plains of the Far West also extend into Canada, cattle and sheep raising are important industries on the plains of western Canada, even to the base of the Rocky Mountains.

The western mountains of the United States contain much gold, silver, and other metals; it is the same with the mountains of Canada. The Klondike region should be remembered as a part of Canada, although it was mentioned in connection with Alaska. (See p. 188.)

Since we know the principal products, let us locate the chief lines of transportation and cities. Canada, like the United States, has a water-route to the ocean. This is partly along the Great Lakes and partly along the St. Lawrence River, one of the great rivers of the continent; but in some places, as at Niagara, it is necessary to pass for short distances through canals. One of the largest of these is the Welland Canal, which connects Lakes Erie and Ontario. Point it out on the map opposite page 167.

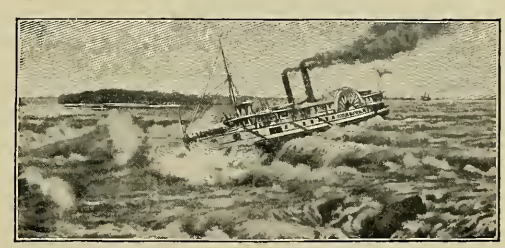

FIG. 169.

The Lachine Rapids on the St. Lawrence, just above Montreal. There is one place down which a steamer can come; but no vessel can go up the rapids. Do you see how this has helped to determine the location of Montreal?

Cities. — The eastern part of Canada is most thickly settled, like the eastern part of the United States, and for the same reasons. What are they? Along the water-route just mentioned are some very large cities, as in the United States. The largest is MONTREAL, which is nearly as large as New Orleans. Like that city, Montreal is situated on a river at a point where ocean vessels can reach it. Farther down the St. Lawrence is the old city of QUEBEC, founded many years ago by the French. OTTAWA, the capital, is west of Quebec, on Ottawa River, and TORONTO is across Lake Ontario from Niagara Falls. Find all these (Fig. 123).

FIG. 170.

Waterfall at Ottawa. The city is seen behind the fall. How has the fall helped to determine the location of Ottawa?

As there is much water-power and coal in eastern Canada, there is a great deal of manufacturing in the cities, especially in Montreal and Toronto.

The cities not on this water-route are smaller. HALIFAX, in Nova Scotia, has an excellent harbor. WINNIPEG, the main city in the wheat region of Manitoba, is connected with the Pacific coast at VANCOUVER and the Atlantic at ST. JOHN by the great Canadian Pacific Railway. From Vancouver and VICTORIA, as from Seattle, Tacoma, Portland, and San Francisco, goods are shipped to Australia and Asia.

The Far North. — In the vast forests of northern Canada live few other people than hunters, trappers, and Indians.

Along the northern coast are found scattered groups of Eskimos, who get their living almost entirely from the sea. Their food is

obtained from the seal, walrus, polar bear, and reindeer; their clothes, summer tents, and boats are made from the skins of these animals; and their oil for light and heat during the long winter night also comes from them. Their winter houses are snow huts, and long journeys over the ice-covered seas are made on sledges drawn by wolf-like dogs.

Fig. 171.

An Eskimo boy from Baffin Land, dressed in his summer furs.

Islands North of North America

The islands north of North America are desolate lands. In winter the sea is frozen; and even in summer floating ice is usually in sight. Some of the ice is that which has frozen on the surface of the sea during the winter; but rising above this are many great blocks of ice, or *icebergs*, sometimes two hundred or three hundred feet in height. They have broken off from the streams of ice, called *glaciers*, that move down from the land and enter the sea. The immense island of Greenland is almost all covered by such glaciers. No land can be seen excepting near the coast, where some Eskimos live and a few Europeans, called Danes, from Denmark. The island belongs to the Danes, who purchase skins, oil, etc., from the Eskimos.

Fig. 172.

An iceberg from the great Greenland glacier.

Review Questions. — (1) Show how the products of Canada correspond with those of northern United States. (2) Where is the St. Lawrence River? Walk in the direction in which it flows. (3) Where does the water come from? (4) Through what waters must a vessel pass in going from Duluth to the Gulf of St. Lawrence

Fig. 173.

Cutting ice from the St. Lawrence River opposite Montreal. What effect should you think this thick ice would have on the commerce of Montreal?

and the ocean? (5) Name and locate the chief cities along this route. (6) Where is the largest city? Why there? (7) Where is Ottawa? Halifax? (8) Name two cities on the western coast. (9) Tell about the people living in northern Canada. (10) How are icebergs caused? (11) Make a drawing of the Great Lakes and St. Lawrence River, putting in the cities.

Suggestions. — (1) What difficulty do you see in building the Welland Canal? How is it overcome? (2) What difficulties should you think the Canadian Pacific Railway would have in running trains in winter? (3) Why is not Hudson Bay an important outlet for goods by water from Canada? (4) How can you explain the fact that there are no large cities along the great Mackenzie River? (5) Find out something about Quebec. (6) Write a story about the Eskimos. (7) Collect pictures of scenes in Canada. (8) Read Longfellow's poem, "Evangeline"; the land of Evangeline is in Nova Scotia.

For References, see page 260.

XVI. COUNTRIES SOUTH OF THE UNITED STATES

Map Questions. — (1) What does the map (Fig. 123, opposite p. 140) tell you about the highlands and lowlands in Mexico? (Notice the rivers.) (2) Find the capital of Mexico. (3) Why is Central America a fitting name for the region southeast of Mexico? (4) Point toward Cuba. (5) How far is Havana from Florida? From New Orleans? (6) What large islands in the West Indies? In what zone are they? (7) What large peninsulas are in Mexico?

Mexico and Central America. — As Canada is colder than the United States, so the countries south of us may be expected to be warmer. Notice that a large part of Mexico is south of the Tropic of Cancer and that Central America is entirely south of it.

Fig. 174.

Popocatepetl, an extinct volcano, not far from Mexico City, and one of the highest mountain peaks on the continent. Notice that the top is white with snow, although in the torrid zone.

Near the seacoast of Mexico the land is low and the climate hot; but in the interior are many mountains and broad, arid plateaus. They are a continuation of those in our Western states, and are so high that the climate is cool.

Some of the highest mountain peaks are old volcanoes made of lava that has poured forth from the earth. These peaks are so high that they are always covered with snow, in spite of the fact that they are in the torrid zone.

With such a variety of climate we shall of course find a variety of products. Much of the mountain region is too cold and rocky for farming; but, as in Colorado, these mountains yield valuable metals, especially silver.

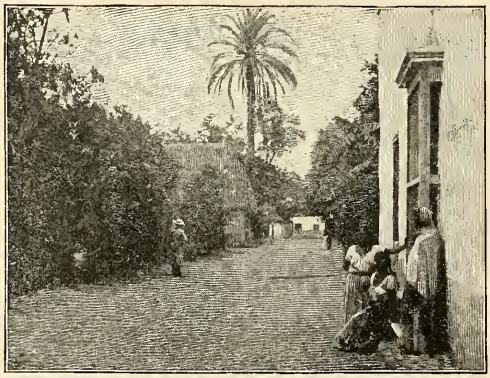

FIG. 175.
A street in a Mexican town.

Part of the Mexican plateau is dry, like western Texas and some of the other Western states. Name some of them. Like these, its value consists largely in wild grass, on which great herds of cattle, sheep, and horses feed. Of what use are these animals? In other parts of the plateau there is enough rainfall for farming; but in most places crops can be raised by the aid of irrigation only.

Along the lowlands of the coast, the rainfall is heavy, and the products are much the same as on the low, damp plains of our own Southern states. What are they? (See pp. 160 and 162.) Besides these, much coffee is grown on the slopes between the coastal plain and the high plateau. Have we found that product before in North America?

There is very little manufacturing in these countries, for two reasons. One is that coal is lacking. Why is that a good reason? The other is that many of the people are too ignorant to manage machinery.

The Spaniards once owned this part of North America, and their language is still spoken there. Most of the people living in Mexico and Central America are either pure Indians, or else Spaniards with Indian blood in their veins, called *half-breeds*. Only about one man in six is a full-blooded Spaniard.

Mexico is now a republic, like the United States, and its capital is the city of MEXICO. The coast on the east is regular, as you can see, so that there are few harbors. VERA CRUZ is the chief port, but the harbor is poor.

Central America is made up of several republics, each having a capital of its own. Many of the people are very ignorant, and there are frequent revolutions, when ambitious generals try to overthrow the government.

At the present time Central America and the Isthmus of Panama are of interest because a canal is being dug there, to save vessels the long journey around South America. Examine the map (Fig. 120, opposite p. 137) to see how much distance will be saved in this way between New York and San Francisco. In Central America are dense tropical forests from which hard woods, dyes, rubber, and other valuable products are obtained.

The West Indies and Bermuda.—Besides the countries on the mainland of the continent there are numerous islands, some of which form an *archipelago* called the West Indies. They are really the highest parts of mountain ranges projecting above the sea and so arranged as to separate the Caribbean Sea from the Gulf of Mexico and from the Atlantic Ocean. All of them have a tropical climate.

The largest island is Cuba, where sugar, tobacco, and tropical fruits, such as bananas, are raised. HAVANA is its capital and largest seaport. Cuba belonged to Spain until

our recent war with Spain, and so did Porto Rico, which now belongs to the United States.

The other large islands are Jamaica, belonging to England, and Haiti, where there are two negro republics. The large islands are called the Greater Antilles; and the small islands, extending in a chain from near Porto Rico to the South American coast, are called the Lesser Antilles. These belong to England, France, and other European nations.

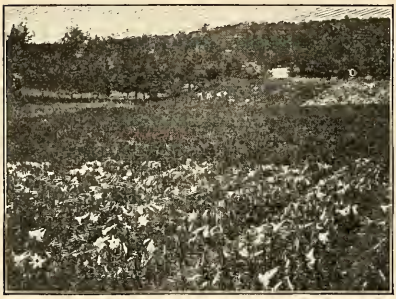

Fig. 176.

A field of Easter lilies in the Bermuda Islands, where these lilies are raised for export to the United States at Easter.

Off the eastern coast of Florida are the low Bahama Islands; and in the open Atlantic, far to the northeast of these, is a tiny cluster called the Bermuda Islands. Both belong to England, and are made of coral sand, as described on page 135.

Review Questions. — (1) Tell about the climate and relief of Mexico. (2) About the industries. (3) About the inhabitants. (4) What cities are there? (5) For what is Central America especially important at present? (6) Tell what you can about the West Indies. (7) The Bahamas. (8) The Bermudas.

Suggestions. — (1) What reason can you see for digging the Nicaragua Canal at the place where it is shown on the map? (2) Why are there no large rivers in Mexico? (3) Find out about the Panama Canal. (4) Tell some of the events that happened in Cuba during our war against Spain. (5) Find out what you can about Cuba; about Porto Rico. (6) In what time of year would it be best for people to visit these islands? (7) Why can potatoes, onions, and other vegetables be grown in Bermuda so early as to reach us in March? (8) Ask some one who has been to the Bermuda or Bahama Islands to tell you what he saw there.

For References, see page 260.


Longitude West 60 from Greenwich
80
70
50
40
CARIBBEAN SEA
Pt. Gallinas
Cartagena
Colon
PANAMA CANAL
PANAMA
Republic of Panama
Isthmus of Panama
Maracaibo
Valencia
La Guaira
Caracas
TRINIDAD (Br.)
Orinoco R.
Magdalena R.
VENEZUELA
Georgetown
Paramaribo
Cayenne
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
Bogota
COLOMBIA
Mouths of the Amazon
EQUATOR
Quito
Cotopaxi, Vol.
Chimborazo, Vol.
Guayaquil
ECUADOR
Rio Negro
Amazon R.
Maranon R.
Madeira R.
Para
Maranhão
Cape St. Roque
Pernambuco
BRAZIL
Andes Mts.
Lima
PERU
Callao
Titicaca L.
BOLIVIA
La Paz
Arequipa
Sucre
Tocantins R.
São Francisco R.
Bahia
Iquique
Pilcomayo R.
Paraguay R.
Rio de Janeiro
São Paulo
C. Frio
TROPIC OF CAPRICORN
PARAGUAY
Asuncion
Parana R.
Uruguay R.
Porto Alegre
Cordoba
Valparaiso
Santiago
Aconcagua Vol.
Rosario
URUGUAY
Montevideo
JUAN FERNANDEZ I. (Chile)
Buenos Aires
La Plata
Plata R.
Colorado R.
ARGENTINA
CHILE
PACIFIC OCEAN
ATLANTIC OCEAN
SOUTH AMERICA
Scale of Miles.
0 100 500 1000
Capitals ⊙ Other Cities •
PATAGONIA
FALKLAND IS. (Br.)
TIERRA DEL FUEGO
Strait of Magellan
Cape Horn
SOUTH GEORGIA (Br.)
Comparative Area.
PENN.
45,215 Square Miles.
90
80
70
60
50
40
30
20
THE W. N. CO.

FIG. 177.

XVII. SOUTH AMERICA

Map Questions. — (1) Compare the shape of South America with that of North America. (2) What great mountain ranges are there along the western side? (3) Which part of South America has no cold winter? (4) Which part has a climate much like that where you live? (5) What is the name of the longest river? (6) Where do you expect to find the most fertile regions? (7) Name the countries of South America.

Relief. — Great mountain chains were found in the western part of North America. What are their names? Through what countries do they extend? In South America there are also high mountains on the western side, called the Andes. The peaks of the Andes are higher than those in the United States, and there are many active volcanoes among them (Fig. 12).

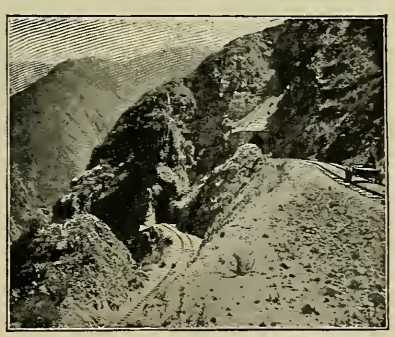

Fig. 178.

Two tunnels on a railway line that crosses the high Andes of Peru.

Besides the Andes, the map shows a highland region in eastern Brazil and a smaller one between the Amazon and Orinoco rivers, forming the divide between them.

The remainder of South America is mainly lowland, drained by three mighty rivers. What are their names? Where does each rise? In what direction does each flow? Which drains the longest slope?

Climate. — The products of the three valleys greatly depend upon their climate; let us, therefore, see how much heat and moisture they have.

Where does the equator cross the continent? Where does the tropic of Capricorn cross it? How much of the continent, then, is in the torrid zone? Where is the coldest part? In which zone?

From this we see that much more than half the continent must have a warm climate; but that the southern part has a temperate climate more like our own. In which months does summer come to this region?

As for the moisture in the torrid or tropical part of South America the rains are very heavy. The reason for this is that the air becomes heated and is thus made very light; it is then forced to rise to such a height that the vapor is condensed, causing heavy showers. (See p. 77.)

There is less rainfall in the south temperate zone, and still less in the narrow strip west of the central part of the Andes, in Chile and Peru. There the climate is quite arid because the principal winds are from the south and east, so that the air loses its vapor in passing over the mountains and descends upon the Pacific slope as dry, parching winds.

History. — Knowing now the chief facts about the relief and climate, let us look at the countries themselves. After the discovery of South America by Columbus the Spaniards settled in many parts, obtaining great quantities of gold and silver, especially in the Andes. Nearly all of South America once belonged to Spain, excepting Brazil, which was settled and for a long time owned by the Portuguese. Although the South American coun-

tries are now independent nations, the Spanish language is still spoken nearly everywhere excepting in Brazil.

Brazil. — This is the largest country, being even larger than the United States without Alaska; but it has only about one-fourth as many inhabitants. Much of the great Amazon valley consists of forest-covered plains, called *silvas*, in which the trees are so close together, and there is such a mat of vines and underbrush, that it is

FIG. 179.

A path through the dense tropical forest of South America.

extremely difficult for one to make his way through. From what was just said about the climate, you may be able to give the reason for such rank growth.

You will find pictures of some of the wild forest animals in Fig. 109, page 131. What are their names?

Of course this forest is not a good home for men, especially since much of the land is frequently flooded; in fact, Indians are almost the only people living there.

They make a living by hunting, fishing, and selling rubber from the rubber tree that grows in the woods.

Rubber is obtained by cutting a hole in the bark and catching the milky fluid that flows forth. After being warmed over a fire to make it more solid, it is sent down the river in boats to PARA and then shipped to many parts of the world. Bicycle tires and overshoes are made from it. See how long a list of other rubber articles you can name.

Another common tree is the cocoa tree, on which grow the beans from which cocoa and chocolate are made. It is difficult to travel in this great wilderness, where the rivers are almost the only roadways.

Most of the inhabitants of Brazil live in the eastern part along the coast. Some of them are white people, but many are either Indians or negroes, or of mixed blood, as in Mexico. You will notice several cities on the coast, of which RIO DE JANEIRO, the capital, is the largest, being about twice the size of New Orleans. It has a splendid harbor.

There must certainly be some important industries in this region to cause a city to become so large. Besides the raising of cattle upon the plateau of eastern Brazil, farming is an important industry there. The principal crops are the same as those already found in warm countries; namely, cotton, sugar, tobacco, and coffee. The last is most important, and Rio de Janeiro is one of the chief export towns, which is the reason why some of our coffee is called Rio coffee.

Venezuela and Guiana. — North of Brazil is Venezuela, which includes most of the Orinoco valley. Here are broad plains, called *llanos*, which produce excellent grass,

so that cattle raising is one of the important industries. Coffee and cocoa are also raised. The capital and largest city is CARACAS, which is located several miles from the coast upon land more than half a mile above the sea. What advantage do you see in such a position?

FIG. 180.

Native Indian women washing clothes in Venezuela. Do you see in the picture any reason for thinking it is warm there?

Just north of the mouth of the Orinoco River is Trinidad Island, which belongs to Great Britain. On that island is a great pitch lake, from which much of the asphalt used in our street pavements is obtained.

All of the countries of South America are republics excepting Guiana, east of Venezuela, which belongs to three European nations. What are their names? And what is the capital of each section of Guiana? The products of these countries are much the same as those of Brazil and Venezuela.

La Plata Countries. — The country south of Brazil, drained by the Plata River and its tributaries, is one of the most productive parts of South America. Here, at the mouth of the Plata River in Argentina, is BUENOS AIRES, the largest city on the continent. Across the wide river mouth is MONTEVIDEO, another large city, in Uruguay. What other small country lies between Argentina and Brazil?

The plains in this section of the country are called *pampas;* and because of their excellent grass one of the chief industries is ranching. Since most of the country is in the temperate zone, corn and wheat are important farm products; and in the warm northern part, near the tropics, tobacco and sugar-cane are raised. This is the part of South America that most nearly corresponds in climate and products to the United States.

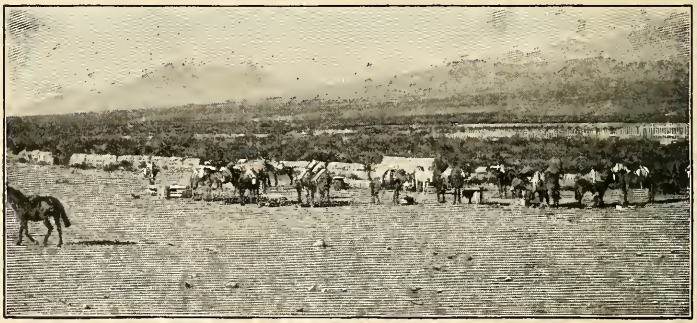

FIG. 181.
A scene on the pampas of Argentina.

Goods are still carried upon the rivers in Argentina, but there are also many railways in that country, — more, in fact, than in any other part of South America.

Andean Countries. — The countries in the western part of South America are very mountainous, since each of them includes a part of the Andean chain. As you might expect, then, one of the principal industries is mining; and immense quantities of gold and silver have been found there. What are the names of these countries?

Observe that most of the cities are not upon the coast. This is partly because they have grown up in the mining

districts among the mountains, and partly because there are so few good harbors. Many of the cities away from the coast have seaports, as CALLAO in Peru, the seaport of LIMA. Find others.

VALPARAISO, in Chile, is the largest port on the Pacific coast; but SANTIAGO, the capital, situated fifty miles inland, and about one-half mile above the sea, is more than twice as large. Notice how long and narrow Chile is; what reason can you give for that?

FIG. 182.

A scene among the lofty, snow-capped mountains of Chile.

Farming is possible in the northern part of the western coast, where the rainfall is heavy; but farther south, as in Peru and northern Chile, agriculture is impossible without irrigation. In southern Chile, however, the rainfall is moderate, and many people have settled there because the farming and grazing are excellent.

Which of the Andean countries has no seacoast? Is that a disadvantage? Ecuador is the Spanish word for Equator. Why is that a fitting name for the country? Colombia and Panama have seacoast on the two oceans and the latter includes the Isthmus of Panama. What

cities do you find on the two sides of the Isthmus? They are to be connected by a canal. Why is this important?

REVIEW QUESTIONS. — (1) Describe the highland regions of South America. (2) What three great valleys are there? (3) In what zones are the different parts of the continent? (4) Which is the rainiest region? Why? (5) What about the rainfall elsewhere? (6) Compare Brazil with the United States in size and number of inhabitants. (7) Tell about the silvas and the valuable products obtained from them. (8) Where are the chief cities in Brazil? Which is the largest? (9) Name the main industries in that section. (10) Where is Venezuela. (11) Tell about the industries there. (12) Where is Caracas? (13) For what is Trinidad noted? (14) Which is the most productive part of South America? What are the products? (15) Name and locate the largest city on the continent. (16) Name the countries along the western side of South America. (17) Why are most of the cities not directly on the coast? (18) Which is the largest port? (19) What are the products of these countries?

SUGGESTIONS. — (1) Draw the outline of South America. Put in the drawing the mountains, chief rivers, and cities. Add the country boundaries. (2) Make a sand model of the continent, showing the highlands and lowlands. (3) What large cities were found in the interior of North America? How about South America in that respect? What are the causes for the difference? (4) Brazil is in the torrid zone, while the United States is in the temperate zone. Which country has the advantage in temperature? Why? (5) Write a story telling of a journey by land and river from the mouth of the Orinoco to the mouth of the Plata. (6) Find some pictures from South America and add them to the school collection. (7) Read something about coffee raising. Read about Pizarro. About Bolivar. (8) From the table on page 268 find the five largest cities in South America. Add the populations together and compare the result with the total of the five largest cities in North America (see p. 264).

For REFERENCES, see page 260.


EUROPE
Scale of Miles
0 100 200 300 400 500 600
Capitals of Countries
Other Cities
ARCTIC OCEAN
ARCTIC CIRCLE
ATLANTIC OCEAN
MEDITERRANEAN SEA
AFRICA
ASIA
RUSSIA
ICELAND (To Denmark)
Reikiavik
Mt.Hecla
FAROE IS. (To Denmark)
SHETLAND IS.
ORKNEY IS.
HEBRIDES
BRITISH ISLES
SCOTLAND
ENGLAND
IRELAND
WALES
Glasgow
Edinburgh
Belfast
Dublin
Liverpool
Manchester
Leeds
Bradford
Newcastle
Sheffield
Hull
Nottingham
Birmingham
Bristol
Cork
London
Dover
English Channel
Irish Sea
North Sea
NORWAY
SWEDEN
Lapland
North Cape
Hammerfest
LOFODEN IS.
Kiolen Mts.
Trondhjem
Bergen
Christiania
Stockholm
Gothenburg
Skager Rack
Cattegat
DENMARK
Copenhagen
Baltic Sea
G. of Bothnia
G. of Finland
Finland
Helsingfors
St.Petersburg
White Sea
Archangel
Dwina R.
L.Onega
L.Ladoga
Riga
Duna R.
Vilna
Valdai Hills
Moscow
Nijni Novgorod
Volga R.
Kazan
Kama R.
Perm
Ekaterinburg
Orenburg
Ural Mountains
Ural R.
Petchora R.
Tundras
Ob R.
Tobolsk
Political Boundary of Russia Proper
Tula
Saratov
Kiev
Kharkov
Ekaterinoslav
Rostov
Don R.
Dnieper R.
Dniester R.
Pruth R.
Odessa
Sea of Azov
CRIMEA
Sevastopol
Black Sea
Astrakhan
Caspian Sea
Caucasus Mts.
Mt.Elbruz
Tiflis
Baku
Trans-Caucasia
Mt.Ararat
Trebizond
Warsaw
Poland
Lodz
Vistula
GERMAN EMPIRE
Berlin
Stettin
Hamburg
Hanover
Elbe R.
Oder R.
Magdeburg
Leipzig
Dresden
Chemnitz
Breslau
Frankfort
Nuremberg
Munich
Danube R.
Düsseldorf
Cologne
Rhine R.
The Hague
Amsterdam
Rotterdam
NETHERLANDS
BELGIUM
Antwerp
Brussels
Lille
Havre
Str. of
Paris
Seine R.
Loire R.
FRANCE
Bay of Biscay
Bordeaux
Lyon
Rhone R.
Marseille
Berne
Geneva
Zürich
SWITZERLAND
The Alps
Mt.Blanc
AUSTRIA-HUNGARY
Vienna
Prague
Budapest
Carpathian Mts.
Trieste
ROUMANIA
Bucharest
SERVIA
Belgrade
MONTENEGRO
Cettinje
BULGARIA
Balkan Mts.
Sofia
Philippopolis
Adrianople
TURKEY
Constantinople
Bosporus
Sea of Marmora
Salonica
Daruanelles
TURKEY IN ASIA
Smyrna
Ægean Sea
GREECE
Athens
CRETE
CYPRUS (To Gt Britain)
ITALY
Turin
Milan
Venice
Genoa
Po R.
Florence
Apennines
Adriatic Sea
Rome
Naples
Mt.Vesuvius
Palermo
SICILY
Str. of Messina
Mt.Etna
MALTA (To Gt.Britain)
CORSICA
SARDINIA
BALEARIC ISLES
SPAIN
PORTUGAL
Cantabrian Mts.
Pyrenees
Douro R.
Tagus R.
Guadalquivir R.
Madrid
Valencia
Barcelona
Malaga
Gibraltar
Str. of Gibraltar
C.Finisterre
Oporto
Lisbon
C.St.Vincent
Fez
Morocco
Algiers
Tunis
Comparative Area
PENN.
45,215 Square Miles
L.L. POATES ENGR'G CO., N.Y.
Longitude West 0° 10° Longitude East 20° from Greenwich 30° 40°

XVIII. EUROPE

Map Questions. — (1) On page 132 it was stated that Eurasia consisted of two continents, Europe and Asia. Trace the boundary line between them, naming the mountains and waters that form it. (2) One of the seas has no outlet; which one is it? What kind of water would you expect to find in that sea? (3) How does the coastline of Europe compare with that of South America? Of North America? (4) Would you expect to find many good harbors? (5) Name the largest peninsulas and draw an outline map to show them. (6) Where are the highest mountains? (7) One of the Alpine peaks is Mt. Blanc. What have you already learned about it? (See p. 21.) (8) Where are the plains? Which very large country is made up mainly of plains? Find Sicily and Sardinia. (9) In what zones is Europe. (10) How do you think its climate would compare with that of the United States? (11) With what European country have we recently been at war? (12) What other countries in Europe do you know something about? (13) By what route would you go from New York to one of them? (See Fig. 120.)

Europe is only a little larger than the United States with Alaska, but contains more than five times as many inhabitants, who are separated into a score of nations, with a different language for nearly every one.

I. The British Isles. — The people in Europe to whom we are most closely related live on the small group of islands, called the British Isles, which lie just west of the mainland. This is often called our "mother country." Can you tell why?

There are two islands, Ireland and Great Britain; what are the names of the three parts of Great Britain?

On these islands are fine harbors and many great cities, LONDON, in the southern part of England, on the Thames River, being the largest city in the world. Let us see what the people do.

Judging from their position one might expect these islands to be too cold for agriculture, for they are farther north than the mouth of the St. Lawrence River; but the climate is no colder than that of the northern United States. The reason for this is that the western coast of Europe is warmed by a broad current, or *drift*, of warm ocean water, known as the Gulf Stream, which flows northeast in the Atlantic Ocean from the warm southern seas. The air over it becomes warmed; and, since the winds of Europe blow chiefly from the west, they carry this warmth with them and produce a climate much milder than one would otherwise expect.

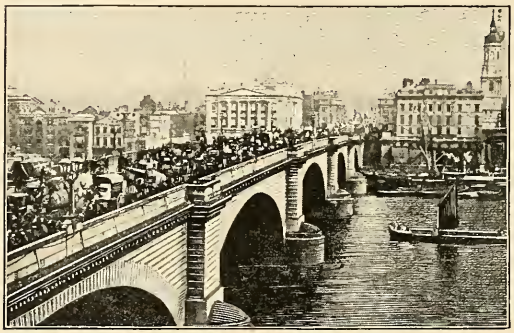

FIG. 184.
London bridge, across the Thames, over which a busy throng is almost constantly passing.

Wales and most of Scotland are too hilly to be well suited to agriculture; but many sheep and cattle are raised. In England there is much more farming, and hay is one of the chief crops, since the damp air and the rain cause the grass to grow well. This is a reason, also, why sheep are raised in great numbers.

But agriculture and stock raising are not the chief occupations. Having much wool, the people long ago

learned to make woollen cloth. In addition to that, they purchased cotton from distant countries, — as New England does to-day from the Southern states, — and made cotton goods. Thus extensive manufacturing industries have been developed, which have been made possible because of the vast beds of coal found there, as in Pennsylvania, Illinois, and neighboring states.

The centre for this manufacturing is MANCHESTER, and the nearest port is LIVERPOOL, thirty-five miles away. Recently a ship canal, called the Manchester Canal, has been built, connecting these two cities. Find them.

The coal has helped to make another great industry possible. Beds of iron ore occur in England, and by the use of coal it is made into iron and steel, especially at BIRMINGHAM, which is the greatest centre for iron manufacturing in Great Britain. Where else have we found a city called Birmingham? What can you tell about it?

The lowland portion of Scotland, about EDINBURGH and GLASGOW, is likewise noted for its cotton and woollen factories, and for its iron manufacturing. Glasgow is the greatest centre for steel shipbuilding in the world. What city in the United States is noted for shipbuilding?

Great numbers of people are employed in all this work, so that enough cloth, knives, needles, engines, and so forth are made to supply many parts of the world.

Ireland is not so much interested in manufacturing, although linen is an important product, being manufactured especially at BELFAST. It is really to a great extent a farm for the English, furnishing them butter, eggs, potatoes, and also meat. The air is so moist that the grass

is kept fresh and green, and on that account Ireland is often called the Emerald (or Green) Isle. The two largest cities are naturally on the side next to England. What are their names?

Fig. 185.
Thatched cottages in Ireland.

So many manufactured goods must be shipped away from Great Britain, and so much food imported, that the shipping business is very important. For this reason there are many skilful sailors in Great Britain, and that nation has more ships upon the sea than any other in the world.

Having so many ships, the British have been led to explore countries in all parts of the world. Whenever they discovered new lands, they laid claim to them in the name of their government, and in that way England has come into possession of Canada, Australia, India, several large countries in Africa, and scores of islands. These are called *colonies*, and the British have more of them than any other nation in the world. Indeed, these colonies cover one hundred times as much surface as the British Isles and have ten times as many inhabitants.

London, the capital and the central port for vessels, has an excellent harbor on the Thames River, where hundreds of ships can be accommodated at one time.

Great Britain and Ireland, together with their many colonies, form the *British Empire*. Its government, unlike our own, is a monarchy; but it is very liberal, and

as in our own country, the people have an important share in the making of laws.

II. Norse Countries. — SWEDEN AND NORWAY. These two countries together occupy the Scandinavian peninsula, and are about as far north as southern Greenland. Were it not for the Gulf Stream, which flows past Norway, this, like Greenland, might be a barren, frozen country. As it is, however, many people live there.

FIG. 186.

The Thames River and Windsor Castle, where Queen Victoria resided.

As in Scotland, most of the country is too hilly and rocky for farming, although some grain, cattle, and sheep are raised, especially on the lower land of southern Sweden along the Baltic. Few people live in the highlands, and about one-fourth of Norway is covered by forests.

The coast is very irregular, and many deep, narrow bays, or *fjords*, reach into the land, making fine harbors. As a result, Norwegians and Swedes are skilful sailors. In the early days these Northmen were the best sailors in the world, and they came to the American shores long before Columbus discovered America. Fishing for cod and herring is now one of their important industries.

The principal cities are STOCKHOLM and CHRISTIANIA. Find each. They are the capitals of Sweden and Norway, but the entire peninsula is ruled by one king, the government being a monarchy.

FIG. 187.
One of the deep, narrow fjords of Norway.

DENMARK, just south of Norway and Sweden, is inhabited by people similar to those in Scandinavia; in fact, these three are often called the *Norse* nations, or the nations of the Northmen.

The Danes, also, have been great sailors, and now have possession of Iceland and the west coast of Greenland. Their country presents a very different appearance from Norway and Sweden, for the land is low and level, and farming is the occupation of about one-half the people. Fishing is also an important industry.

FIG. 188.
Danish women selling fish.

The government is a monarchy, the capital and largest city being COPENHAGEN, situated on an island.

III. Russia.—The Russian Empire not only includes great plains in Europe, but extends several thousand miles beyond the Ural Mountains to the

eastern coast of Asia ; it is larger than the whole of the continent of North America and contains a greater number of inhabitants.

Most of Russia in Europe is a level country. The northern part, like northern Norway, is in the frigid zone, and so far away from the Gulf Stream that the climate is extremely cold. The plains there, called *tundras*, are too cold for trees, and the frost never leaves the ground except at the very surface in summer. Nevertheless, a moss flourishes and supports numbers of reindeer, which are used as draft animals by the natives.

The southeastern plains, called *steppes*, are so far from the ocean that the west winds can bring them little rain. They are therefore dry like the arid region in our Western states. But the central and western parts are well suited to farming, and there most of the people live. As in the northern United States, one of their main crops is grain, especially wheat ; and vast numbers of cattle and sheep roam over the broad, grassy steppes.

The rivers are excellent waterways, the largest of all being the Volga, the greatest river in Europe. What others do you find?

Since the Caspian Sea has no outlet, and the Arctic Ocean on the north side is frozen much of the time, the chief ports for foreign commerce must be either on the Baltic or the Black Sea. This explains the location of ST. PETERSBURG, the capital and largest city, which is about the size of Philadelphia. ODESSA, on the Black Sea, contains many flour-mills and is an important port for the export of wheat. With what two cities northwest of Chicago may it be compared?

The chief railway centre is MOSCOW in the interior, which is nearly twice as large as Boston.

The great mass of the people, called *peasants*, are not allowed to take any part in the government, and, unlike most of the Europeans, are kept in ignorance and subjection. They are ruled by a man called the *Czar*, who makes and executes laws very much as he pleases. That kind of government is called an absolute monarchy, or despotism, and is very different from the limited monarchies thus far studied.

Fig. 189.
A family of Russian peasants.

IV. Germany. — The general slope of the land in Germany is shown by the rivers; in what direction do most of them flow? The southern part of the country consists of mountains and highlands, but the northern part is a great plain, a continuation of the plains of Russia.

As in Russia, there is much agriculture, one of the chief products being grain. Much of their bread is made from a grain called rye, and is so dark that it is called "black bread." Beets are grown in enormous quantities, and sugar is manufactured from them as it is from sugar-cane in Louisiana. Grapes flourish along the upper Rhine River, and from these wine is made; and more hops for making beer are raised in Germany than in any other country of the world.

Both coal and iron ore are mined in abundance; and many articles are manufactured, such as the famous Krupp guns

and many kinds of machinery. Germany is noted also for its manufacture of cotton, woollen, and linen goods, ranking next to England as a manufacturing country of Europe.

The chief seaport is HAMBURG on the Elbe River, a city about the size of St. Louis. Why should the chief port be at this point rather than farther east on the Baltic Sea? A ship canal has recently been dug across the peninsula south of Denmark. What are the advantages from it?

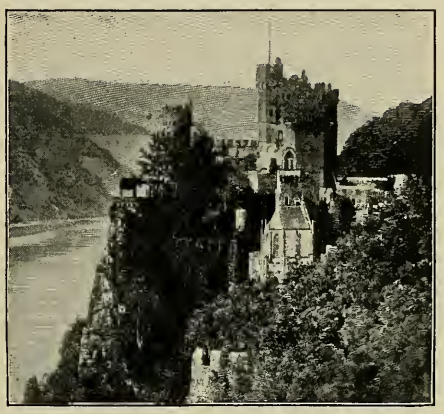

FIG. 190.
A castle on the Rhine.

FIG. 191.
The Royal Museum at Berlin.

The schools, universities, and museums of Germany are among the best that exist, and many Americans go to Germany each year to

study music, painting, and other subjects. The largest university is in BERLIN; LEIPZIG also has one, and there are many others. MUNICH and DRESDEN are noted for their fine picture galleries, and so is BERLIN, which also has other large museums. Find these cities.

BERLIN, the capital of Germany, is the largest city. The government is a limited monarchy, and the present ruler is Emperor William II.

V. Holland, or the Netherlands (a word that means *lowlands*), is a low, flat country, much of it being lower than the neighboring sea.

FIG. 192.
A canal in Holland.

The inhabitants have built embankments, called *dikes*, to keep the sea out, and have dug canals across the country to drain it. The water that collects inside the embankments is pumped out by windmills, or by steam, into the canals, and these canals are the chief roads, being used in summer by boats and in winter by people on skates or on sleds.

The damp soil furnishes excellent grass, so that cattle raising and dairying are the principal occupations.

The Hollanders, or Dutchmen, living so near the sea, have become great sailors and explorers, like the Englishmen. For this reason they have come into possession of some of the richest islands in the East Indies, from which are obtained valuable products, such as coffee, spices, and precious stones. On the map, Fig. 221, facing page 249, find the names of some of the Dutch East Indies. Find out about the early Dutch settlements in America. What great city did they settle?

The chief city is AMSTERDAM, which is about the size of Baltimore. The government is a monarchy, and the laws are made at THE HAGUE, on the coast.

VI. Belgium, like Holland, has some land that is lower than the sea and protected by dikes; but the eastern part is much higher.

The people are crowded together more closely than in any other country of Europe. Many live on farms and raise much the same products as those of Holland and Germany. What are these?

FIG. 193.
A windmill, in Belgium, like those so common in Holland.

Flax is an important farm product. It is a plant about two feet high, whose fibre is used in making linen and fine laces. The Belgians have long been skilful in such work, and it was from them that the English received some of their knowledge about manufacturing. BRUSSELS, the largest city, is famous for its fine laces, linens, and Brussels carpets, the latter being made of wool on a mat of linen.

There is a great amount of coal and iron in this little kingdom, so that the iron industry is extensive, as in Germany.

The government is a monarchy with BRUSSELS for its capital. ANTWERP is the chief seaport.

VII. France. — The slope of the land in France you see by the course of its rivers. What are their names? Where do they rise and in what direction do they flow?

In the cool northern part the crops are similar to those of Germany; but in the southern portion the

climate is warmer and the crops somewhat different. Besides grapes, which are grown in great quantities in the region of BORDEAUX, and made into wine that is sold in many parts of the world, much silk is also produced.

Silk is manufactured from cocoons spun by a caterpillar called the *silkworm*. Each one of the cocoons is made of a fine thread several thousand yards long, looking somewhat like the thread of a spider's web.

After the cocoons have been softened in hot water the threads are unwound and then wound upon spools. They are later made into thread and woven into silk cloth, ribbons, handkerchiefs, and other silk goods.

Much depends upon the proper care of the silkworm. Their principal food is the leaf of the mulberry tree, which is planted in great groves in the Rhone Valley, in southern France. The leaves are plucked and fed to the worms.

LYON, the centre for the silk industry, and the greatest silk market in the world, is next to the largest city in France.

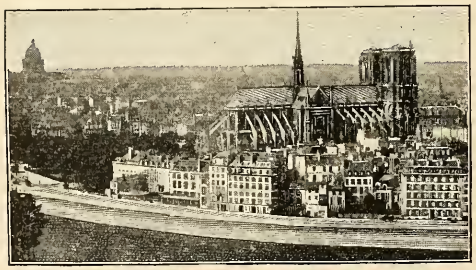

FIG. 194.
A view of the great city of Paris.

PARIS, the largest city in France, is the third in size in the world, and probably the most beautiful. Like several cities in Germany, it has fine picture galleries and museums, and many foreigners go there to study painting, music, and other subjects. It is situated upon the Seine River, and its chief port is HAVRE, at the mouth of the Seine.

Bordeaux, already mentioned, is an important shipping port for wine, and Marseille is the principal port upon the Mediterranean coast. From these three harbors France ships goods to and from her several colonies and other countries.

Fig. 195.
The harbor of Marseille.

The French government was formerly a monarchy, but is now a republic with Paris as its capital.

VIII. Spain and Portugal. — The Pyrenees Mountains form the boundary between France and Spain, rising like a great wall to separate the two countries.

You remember that Magellan was a Portuguese and that it was to Spain that Columbus went for help. These were once among the most powerful nations in the world, and they once ruled much of North America and most of South America. Little by little they have lost their colonies in the New World, the last to be taken being Cuba and Porto Rico.

Like Mexico, which was settled and for a long time owned by the Spanish, Spain has a dry, mountainous plateau or table-land in the interior, with low land along the coast.

Being so much like a desert, one would expect few people to make their homes in the interior; and this is the case, although, strange to say, the greatest city,

MADRID, is found in the centre of this table-land. Its importance is due to the fact that it is the capital of Spain.

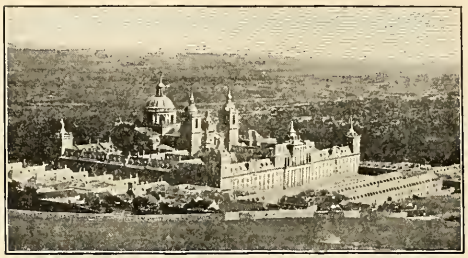

FIG. 196.
A view of a part of Madrid and the great plateau on which it is situated.

As upon our dry Western plains and plateaus, cattle and sheep raising are important industries on this highland. But the rocks of this region contain its chief wealth, for Spain produces more quicksilver and lead than any other nation, and more copper and iron than most others.

Farming is carried on in the mountain valleys and on the low lands along the coast. One of the most valuable crops is grapes; you have doubtless seen Malaga grapes, named from the city of MALAGA on the southern coast. Many grapes are made into wine; others are dried to make raisins. Other fruits grown here are olives, lemons, oranges, and figs; besides this much cork is obtained from the bark of the cork oak.

BARCELONA, on the eastern side, is the chief port of Spain; and the principal city of Portugal is LISBON, the capital.

Both governments are limited monarchies, like those of most European countries.

IX. Italy was once the most powerful country in the world. Its principal city was ROME, and the Romans ruled nearly all the other countries then known. But, like Spain, it has lost much of its importance.

ROME is still the capital and the residence of the king;

also of the Pope, who is the head of the Roman Catholic Church. The city is especially noted for its many ruins of buildings erected hundreds of years ago.

FIG. 197.

St. Peter's Cathedral on the left, and the Vatican, the residence of the Pope, on the right.

VENICE, at the head of the Adriatic Sea, is another interesting city. It is built upon many islands joined by hundreds of bridges, and its chief streets are canals, where boats, called *gondolas*, are used in place of wagons and carriages.

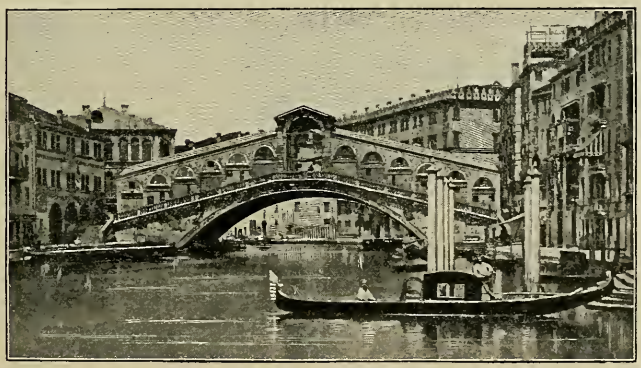

FIG. 198.

One of the canals of Venice, with a gondola floating upon it.

NAPLES, which is on the coast southeast of Rome, and near Mt. Vesuvius, is the largest city in Italy. The steam

rising from the crater of Vesuvius is easily seen from the city (Fig. 102). Volcanic ash from Mt. Vesuvius has entirely buried some of the towns near by, such as the ancient city of Pompeii, from which the ashes have been dug away so as to bring to light the buried buildings and streets.

The best farm land is in the valley of the Po River in the northern part, where wheat, and other grains, and mulberry trees for silkworms are raised. MILAN, like Lyon in France, is a great centre for silk.

The climate is mild enough to produce the same fruits that are grown in Florida and Southern California. Name some of them.

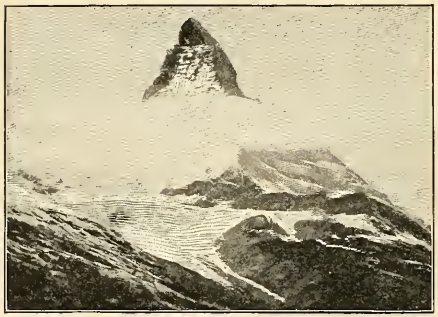

FIG. 199.

The snow-capped Matterhorn, one of the Alpine peaks.

X. Switzerland. — Any one who has heard the story of William Tell, or who has read about the St. Bernard dogs kept by the monks, has some idea of how Switzerland looks. Here are the snow-capped Alps, with many lakes and fertile valleys between them, and views so beautiful that thousands of people go every year to enjoy them (p. 21). One of the occupations of the Swiss is to provide for these visitors in hotels and restaurants.

The green grass in the low-lying valleys and on the mountain sides provides excellent food for cattle and goats, so that butter and cheese are made, as in Holland. Probably you have heard of Swiss and Dutch cheese.

Wood carving is also an important industry. During the long

winters the wood grown upon the mountains is carved into toys, clocks, and many other articles. Have you ever seen a Swiss clock?

Name the countries on each side of Switzerland, and notice that it is surrounded by people who speak German, French, and Italian. In consequence, instead of having one language of their own, the Swiss have these three, those living in each part speaking the language of the foreign country nearest to them.

The Swiss government has long been a republic, like our own, and BERNE is the capital. Find the chief cities, ZÜRICH and GENEVA.

FIG. 200.

A view in Austria.

XI. Austria-Hungary. — Austria and Hungary are united under one monarchy, although they have different customs and languages. Many of the Austrians are closely related to the Germans; but the Hungarians are a very different race. The capital and largest city is VIENNA, the fourth in size in Europe. It is situated on the Danube River, so that it has water connection with many other places.

BUDAPEST is next to Vienna in importance. Like Minneapolis, it is in the midst of a great wheat region, and is a flour-milling centre.

The cultivation of flax leads to another manufacturing industry. What is it?

Which parts of Austria-Hungary are mountainous? Much coal and iron are found in the northwestern part near Germany, and PRAGUE is noted for the manufacture of hardware. The chief harbor is on the Adriatic coast; what is its name?

XII. Greece. — The country in Europe which has perhaps had the greatest influence upon the rest of the world is Greece. The Romans received many of their beliefs and

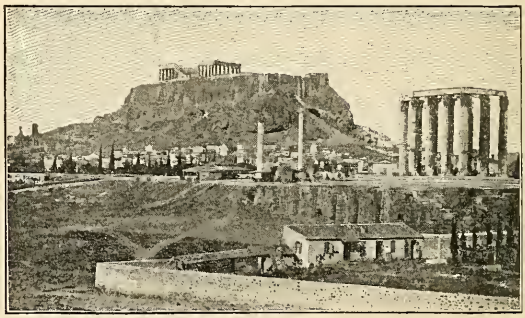

FIG. 201.

The Acropolis with its ruins on top, and the ruins of the Temple of Jupiter on the right, both in ancient Athens.

customs from the Greeks; and since many of ours come from the Romans, we also are greatly in debt to the Greeks.

The centre of this influence was ATHENS, once the most famous city in the world. Many years later, at the time of Christ, it was still an important place. Both Athens and Corinth, near by, are mentioned in the Bible.

The country is mountainous, producing raisins and other fruits, and much grass for grazing. But there is little mining and manufacturing.

At one time the Greeks were conquered by the Turks and very

cruelly treated by them; but they obtained their independence, and their government is now a monarchy with ATHENS for its capital.

XIII. Turkey. — The largest city in southeastern Europe is CONSTANTINOPLE, which is about one-half as large as Chicago. Notice what an excellent location it has. It is the capital of Turkey, which, like Russia, is a country partly in Europe and partly in Asia.

The Turkish government is the worst in Europe. The ruler, called the *Sultan*, is an absolute despot, who governs his people so badly that they are kept extremely ignorant and poor. In all the other nations of Europe the Christian religion, either Catholic or Protestant, is followed; but the Turks are Mohammedans, followers of Mohammed, like many other people in Asia and Africa. They are religious fanatics, and dislike Christians very much.

FIG. 202.
A mosque, or Mohammedan church, in Constantinople.

One proof that the Turkish government is bad, is the fact that the people in many parts of the Empire have rebelled against it and fought for their freedom. For example, Roumania, east of Austria, used to belong to Turkey, but it is now an independent kingdom. The same is true of Bulgaria, Servia, and Montenegro; Greece has already been mentioned.

The people in all these countries are largely engaged in farming and herding, the Danube Valley being especially fertile. Grain, wine, and raisins are important products.

REVIEW QUESTIONS AND SUGGESTIONS

I. The British Isles. QUESTIONS. — (1) What are the divisions of the British Isles? Where is each? (2) Why have not the British Isles a colder climate? (3) Tell about the agriculture. (4) What kinds of cloth are manufactured? Where? (5) Where is the iron manufacturing carried on? (6) Of what value are the coal-beds? (7) Tell about Ireland. (8) Explain how Great Britain has come to have so many ships. (9) So many colonies. Name some of them, including several islands near North America. (10) What is the British Empire? What kind of government has it? (11) Locate all the cities mentioned.

SUGGESTIONS. — (12) What books have you read whose authors lived in Great Britain? (13) Examine pocket-knives and table-knives to see if you can find some made in England. (14) The iron manufactories of England remind you of what states in this country? (15) When did our country cease to be a colony of Great Britain? (16) What are the people from the four divisions of the British Isles called? (17) Make a drawing of the British Isles.

II. Norse Countries. QUESTIONS. — (18) What about the climate of Norway and Sweden? (19) Tell about the agriculture; the other industries. (20) What are the Norse nations? (21) What colonies have the Danes? (22) Name the chief industries of Denmark. (23) What kind of government have these Norse countries? and what is the capital of each?

SUGGESTIONS. — (24) Find out something about Iceland. (25) In what other section that you have studied is fishing important? (26) Find out about the length of days and nights in Norway. (27) Draw a map of the Scandinavian peninsula.

III. Russia. QUESTIONS. — (28) Tell about the size of Russia. (29) What parts of Russia in Europe are not fitted for farming? Why? (30) What is the main occupation of the people? Name the important products. (31) What are the tundras? The steppes? (32) Which is the largest river in Europe? (33) Where are the leading Russian ports? (34) Locate three of the largest cities, and state why each is important. (35) Tell about the government.

SUGGESTIONS. — (36) Why would you not expect Russian sailors to be as numerous as the English sailors? (37) Name some city of

the United States which is about as far north as Odessa. (38) How does the northern location of St. Petersburg interfere with its commerce by sea? (39) What city on the St. Lawrence has the same difficulty? (40) Show the route a vessel would take in going from Odessa to London. From Odessa to St. Petersburg.

IV. Germany. Questions. — (41) Where is the highest land in Germany? The great plains? (42) Tell about the chief farm products. (43) What are the principal manufactures in Germany? (44) Where is Hamburg? (45) For what is Berlin noted? Leipzig? Munich? Dresden? Locate each. (46) Tell about the government.

Suggestions. — (47) Do you know any songs or stories about the Rhine River? (48) Make a drawing showing the course of this river. (49) Do you know of any German paintings? Of any music written by Germans? (50) Make a collection of German pictures.

V. Holland. Questions. — (51) Tell about the dikes and canals of Holland. (52) What is the principal industry? Why? (53) What important colonies has Holland? (54) What are the main cities?

Suggestions. — (55) Write a story telling what you think might result if a dike were to give way. (56) Find a picture of a Dutch windmill. (57) Tell what you would expect to see in crossing Holland on a railway train.

VI. Belgium. Questions. — (58) What are the farm products of Belgium? (59) Tell what you can about flax. (60) Name and locate the two principal cities. (61) What about coal and iron?

Suggestions. — (62) Examine a piece of Brussels carpet; a piece of lace also.

VII. France. Questions. — (63) Describe the chief slopes of France. (64) What are the products in the northern part? In the southern part? (65) Tell about the silk industry. (66) What can you say about the capital? (67) About each of the other cities? (68) What kind of government has France?

Suggestions. — (69) Examine a cocoon and a piece of silk. Obtain a caterpillar, if possible the silkworm, and raise it in the school to see how the silkworm forms silk and what happens to the "worm." (70) Why would the value of a cocoon be destroyed if the chrysalis inside were to break through in order to get out? (71) Can you find any pictures of Paris?

VIII. Spain and Portugal. QUESTIONS. — (72) Where are the Pyrenees Mountains? (73) Tell about the former power of these countries. (74) Describe the relief and climate. (75) What are the industries on the plateau? (76) What minerals are found there? (77) Where is most of the farming? What are the chief products? (78) Name and locate the most important coast cities. The two capitals.

SUGGESTIONS. — (79) Would you expect the rivers to be navigable for any considerable distance from the Spanish coast? Why? (80) Make a sand map of Spain, showing the high and low land. (81) Examine some quicksilver. For what is it used? (82) Can you find out anything about the Moors and the Alhambra in southern Spain? Perhaps you can find pictures from there. Washington Irving has written some beautiful stories about the Alhambra.

IX. Italy. QUESTIONS. — (83) Where is Rome? Venice? Naples? Mt. Vesuvius? Milan? (84) Tell something about each of these. (85) Where are the mountains? (86) Where is the Po Valley? (87) What is raised in Italy?

SUGGESTIONS. — (88) Find pictures of some of the ruins in Rome. (89) Of some of the buildings in Venice. (90) Look on a globe to see in which direction Rome is from New York. (91) Draw a map of Italy.

X. Switzerland. QUESTIONS. — (92) What are some of the industries of the Swiss? (93) What languages are spoken? (94) Name the principal cities. (95) What is the kind of government?

SUGGESTIONS. — (96) Read the story of William Tell. (97) Find other stories about Switzerland. (98) What disadvantages do you see in having so many languages? (99) What large rivers rise in Switzerland? (100) Write a story describing a visit to the Alps. You will get some suggestions from Figure 15, page 18, Figure 110, page 132, and Figure 20, page 23.

XI. Austria-Hungary. QUESTIONS. — (101) Name four leading cities in Austria-Hungary. (102) Tell why each is important.

SUGGESTIONS. — (103) Trace the Danube River from its source to its mouth. (104) How far is Trieste from Venice? (105) Through what waters would a vessel pass in sailing from New York to Trieste? (106) By using the scale on the map, find out how far Vienna is from Munich. From Leipzig. From Berlin. From Paris. From St. Petersburg. (107) In what direction is it from each of these?

XII. Greece. QUESTIONS. — (108) What can you say about the influence of Greece upon the world? (109) Find Athens. (110) Tell about the climate and products.

SUGGESTIONS. — (111) Where can you read about Ulysses? (112) Have some one tell you the story of the Trojan War. (113) Find some other stories about the ancient Greeks.

XIII. Turkey. QUESTIONS. — (114) Where is Turkey? What is its capital? (115) Tell about its government. (116) What is the chief occupation of the people? (117) What countries have gained their independence from Turkey?

SUGGESTIONS. — (118) What is the boundary line between Turkey in Europe and Turkey in Asia? (119) Examine a Turkish rug. (120) What reasons can you give why Russia would like to own Constantinople?

GENERAL SUGGESTIONS

(121) Do you know of any persons who have come from one of these countries of Europe? If so, ask them to tell you about them. Also have them speak in their native language. (122) Ask a merchant to show you some goods from Europe. (123) What difficulties would you expect to meet if you were to travel through Europe without knowing any foreign languages? (124) Bound each of the countries of Europe. (125) Draw an outline map of Europe, putting in these boundaries and the principal rivers. (126) Make a dot to represent Berlin; also locate the other large cities. Mark the capitals with stars. (127) Collect pictures of Europe for the school collection. (128) Cut out scraps, from the magazines and papers, relating to the people, animals, plants, cities, etc., of different parts of Europe and present them to the school to be kept for use in the geography class. They can be arranged by countries and will be very useful.

For REFERENCES, see page 261.

XIX. ASIA

Map Questions. — (1) Through what zones does Asia extend? (2) What climate would you expect to find? (3) Where are the highest mountains and plateaus? (4) What rivers have their sources in that region? (5) What large inland seas do you find? (6) What three large peninsulas on the southern side? (7) What three were found on the south side of Europe? (8) How does Asia compare in size with Europe? (9) Find Asia on a globe. (10) How could you reach it, if you wished to go there? (11) On the map, which way is north from the British Isles? From Kamchatka?

Physical Geography. — Like Europe, the coast of Asia is very irregular, with many peninsulas and islands. Draw an outline map of it, showing these, with the larger bays and seas enclosed by them.

Note the direction in which the many mountain ranges extend. The loftiest among them, and in fact the highest in the world, are the Himalaya Mountains (Fig. 204), the highest peak, Mount Everest, being over twenty-nine thousand feet, or about five and one-half miles, above the sea. Where is it? How does it compare in height with Mt. Blanc? (See p. 270.)

North of the Himalayas are lofty plateaus, one of them, the plateau of Tibet, being about three miles in height. How does that compare with the Spanish plateau (see p. 271) and with our western plateau (see p. 271)? It is so high that the winter climate is very cold; and since the winds from the ocean have lost their moisture in passing over the mountains, these plateaus are also


ASIA
Scale of Miles
0
500
1000
Capitals of Countries
Other Places
L.L. POATES ENGR'G CO. N.Y.
Comparative Area
PENNA.
45.215 Square Miles
50° Longitude 60° East 70° from 80° Greenwich 90°
ARCTIC OCEAN
INDIAN OCEAN
PACIFIC OCEAN
EUROPE
RUSSIA
SIBERIA
RUSSIAN EMPIRE
CENTRAL ASIA
CHINESE EMPIRE
MONGOLIA
MANCHURIA
TIBET
CHINA
INDIA
HINDUSTAN
ARABIA
PERSIA
AFGHANISTAN
TURKISH EMPIRE
AFRICA
JAPAN
EMPIRE OF JAPAN
KOREA
SIAM
FRENCH INDO-CHINA
PHILIPPINE ISLANDS
BORNEO
CEYLON
London
Paris
Berlin
Vienna
St. Petersburg
Moscow
Constantinople
Tobolsk
Yakutsk
Irkutsk
Teheran
Kabul
Delhi
Calcutta
Bombay
Madras
Peking
Shanghai
Canton
Hongkong
Tokyo
Vladivostok
Manila
Bangkok
Singapore
Mediterranean Sea
Black Sea
Caspian Sea
Aral Sea
Red Sea
Persian Gulf
Arabian Sea
Bay of Bengal
China Sea
Japan Sea
Yellow Sea
Okhotsk Sea
Bering Sea
Lake Baikal
Lake Balkash
Tundras
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
Ural Mts.
Altai Mts.
Himalaya Mts.
Kuenlun Mts.
Stanovoi Mts.
Mt. Everest
Desert of Gobi
Kirghiz Steppes
Ob R.
Yenisei R.
Lena R.
Amur R.
Ganges R.
Indus R.
Yangtse-kiang

FIG. 203.

dry. Farther north it is drier still, and we find there the great desert of Gobi.

These mountains and plateaus form the watershed of the continent. Find three great rivers that flow northward from the watershed through the vast plain of Siberia. Name three that flow eastward into the Pacific Ocean. What others flow southward?

The southwestern portion of Asia is mainly a desert because the winds blowing over it come from the land instead of from the sea, and therefore have little vapor.

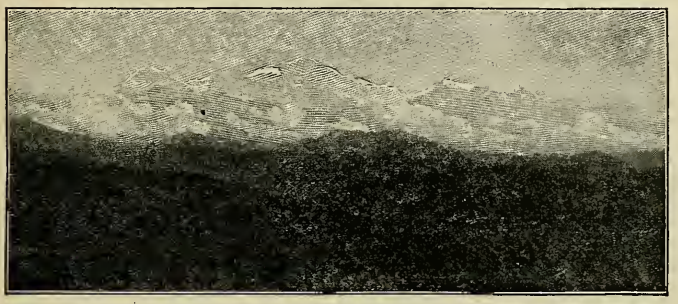

FIG. 204.

The snowy range of the lofty Himalayas.

From what has been said about the climate it is plain that the inhabitants of this continent must be found chiefly in the eastern and southern parts. There they live in vast numbers along the coast and the large rivers; in fact, nearly one-half of all the people in the world are found in these regions.

I. Southwestern Asia. — Rome and Athens have been mentioned as cities that have had a great influence upon other countries. But the part of the world which has probably had the greatest influence of all is that at the eastern end of the Mediterranean Sea. Here is the land

that used to be called Palestine, the home of the Jews; and here is still the city of JERUSALEM (Fig. 205), near which Christ was born about 1900 years ago, and in which He was crucified. The Christian churches and Christmas are in His memory. The home of Christ, where the Christian religion was founded, is now a part of the Turkish empire which extends into Asia.

Turkey extends down the western coast of the Arabian peninsula, and includes another famous city called MECCA. The Turks are not Christians but Mohammedans, or followers of Mohammed, who was

FIG. 205.

A picture of a part of Jerusalem.

born at Mecca nearly fourteen hundred years ago. The Mohammedans believe in God, and their holy book is called the Koran. A great many other people in Asia and northern Africa are followers of Mohammed.

The western part of Asia, including Turkey, Arabia, and Persia, has a very dry or arid climate. This is particularly true of Arabia, which is mainly a desert plateau much more arid than Spain.

In this desert country agriculture is not a very impor-

tant industry; but dates and coffee are raised there, especially near the rivers and along the coast. You have perhaps heard of MOCHA coffee, and if you look on the map you can find the place from which it gets its name.

FIG. 206.
The home of a group of Persian nomads.

Although so much of this region is desert, there are places, called *oases*, where water is found. As these are usually too small to furnish water and grass for large herds during a long time, the Arabs are forced to wander from place to place, having no fixed homes. On that account they are called *nomads* or wanderers (Fig. 206). They take special pride in raising horses, which have become famous throughout the world. They also keep cattle, sheep, goats, and camels.

Much of Persia is also a desert; but some parts are well suited to grazing, and the climate is warm enough for such fruits as figs and dates. What is the capital? The ruler of the Persians is a despot called the *Shah*.

The people of these countries are not civilized enough to carry on much manufacturing, although beautiful carpets, rugs, and shawls are made in great numbers, especially in Persia and Turkey. The

work is done by hand, and though it is well done, it requires a great deal of time, while in our great factories carpets are quickly made by machinery. Railways are almost unknown, and even carriage roads are usually lacking. Goods are carried upon camels in groups, called *caravans*, and men travel upon the backs of horses and camels.

II. Siberia. — Siberia belongs to Russia. It is a region of extensive plains and is much larger than the whole of Russia in Europe. Like northern Canada, much of it is so cold that few people can live there, and it has been made a prison for many Russians who have committed crime, or who have offended their despotic rulers.

A large portion of southwestern Siberia is a desert having numerous lakes without outlets. Would you expect them to be salt or fresh? Between this arid section and the bleak northern plains, or tundras, which resemble those of northern Europe, is a region where there are extensive forests, and broad plains suited for grazing and farming.

FIG. 207.
A Siberian three-horse wagon.

One of the chief sources of wealth of Siberia is in the gold mines of the Ural Mountains. Graphite, from which the "lead" in lead pencils is made, is also found there. Many of the prisoners from Russia are compelled to work in these mines.

The Russian government has built a great railway all the way from St. Petersburg eastward to Port Arthur in China on the Pacific coast. How far is that?

III. The Chinese Empire and Corea. — Some of the most important arts that we have ever learned first came from the Chinese. For instance, they made porcelain dishes long before Europeans knew how, and on that account

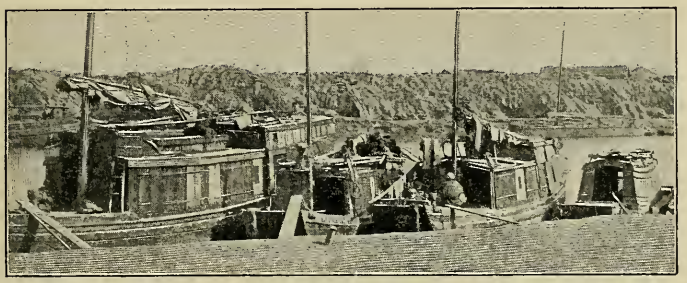

Fig. 208.
Houseboats on the Tientsin River of China.

those dishes are still called *chinaware*, even though manufactured in the United States. They invented gunpowder, and our firecrackers for the Fourth of July used to come from China. They also discovered how to make silk and paper, and they invented the art of printing.

But while this strange-looking, yellow race was once among the foremost nations of the earth, it is now very much behind. This is explained partly by the fact that their religion causes them to worship their ancestors, so that whatever their fathers did, they must do. Since their fathers had no railways, telegraphs, or telephones, none are wanted now. Owing to their fear of new things, they have neither travelled abroad much nor allowed foreigners to visit them.

But recently many Chinese have come to this country, working as servants, especially on the Pacific coast, and as laundrymen in all

parts of our country. Besides that, they now allow foreigners to live in some of their coast cities and trade with the people.

CANTON in the southern part, which is considerably larger than Chicago, and SHANGHAI, a city nearly as large as Baltimore, are the principal ports for trade with Americans. HONGKONG is a British port.

Much of the northern and western portions of the Chinese Empire are so high and dry that few persons can live there. Find the names of those parts. But the lower plains near the coast, especially the fertile flood plains and deltas of the great rivers, support a vast population, because the soil is fertile, and abundant rainfall is supplied by the damp winds from the Pacific. Here live nearly one-fourth of all the inhabitants of the globe, crowded together so closely that many thousands dwell in boats on the rivers.

In the northern part a great deal of wheat is raised; but farther south rice, millet, tea, and silk are important products. China produces more raw silk than any other country in the world. What other regions are noted for these same products?

FIG. 209.
Temple in Peking.

The government is an absolute monarchy, with the capital at PEKING, which, like TIENTSIN, its seaport, is nearly twice as large as Boston. The government is so weak and corrupt that European nations are

able to seize and hold parts of the country, so that the once great empire is in danger of being destroyed and the different parts made subject to various European nations.

Korea is also a very unprogressive nation which, until recently, would not permit foreigners to enter.

IV. Japan.— The Japanese live upon islands east of Asia, as the British do west of Europe. Their territory is but slightly larger than the British Isles, and there are not many more inhabitants. Many of the islands are small, but there are five large ones, the southernmost being Formosa. They are really the crest of a mountain range rising above the sea, and some of the mountain peaks are volcanoes.

FIG. 210.
A Japanese woman being carried in a travelling chair by two Japanese men.

The Japanese used to be much like their neighbors, the Chinese; that is, they believed in ancestor worship, and wanted nothing to do with foreigners. But in 1853 an American naval officer, with several war-ships, entered the harbor of Yokohama and persuaded the Japanese to allow us to trade with them.

Before many years had passed the Japanese not only allowed foreigners to enter, but they invited them to come as teachers, and even sent some of their own young men abroad to study. There have been many Japanese students in the colleges and universities of the United States during the last twenty years.

The result is that Japan is now far in advance of China, and in

fact of all other parts of Asia. Railways, telephones, and newspapers are common, and there are many good schools, while rapid progress has been made in manufacturing.

That the Japanese are very skilful in many kinds of handiwork is suggested by the Japanese fans, parasols, napkins, dolls, and screens so often seen in this country. Whatever they make they try to make beautiful, being one of the most artistic races in the world.

Fig. 211.

The way Japanese babies are carried by the young girls. The baby leaning back is asleep.

Japan, like China, produces a great amount of silk, rice, and tea. There is also some mining.

The principal city and capital is Tokio, which is as large as Philadelphia, and is the home of the emperor, called the *Mikado*. Its seaport is Yokohama, a city as large as Rochester.

V. India and Indo-China. — India, the central one of the three peninsulas on the southern side of Asia, is the country that Columbus thought he had reached when he discovered America. Hence the name "Indians" for the savages whom he met.

The damp winds from the Indian Ocean furnish the plains and mountains of India with so much rain that in places the forests form a perfect tangle or *jungle* of luxuriant vegetation, in which live tigers, elephants, and many other wild animals. Have you ever read Rudyard Kipling's "Jungle Book," which tells of this region?

FIG. 212.
Idols in a cave near Bombay.

Several very large rivers rise in the Himalayas and flow across the plains. One is the Indus, from which the word India comes, and also the word Hindoos, as the inhabitants are sometimes called. The river flowing southeast is the Ganges, on which is the capital and largest city, CALCUTTA. The next city in size on this eastern coast is MADRAS, far to the south, while the largest city on the west side is BOMBAY, which has the best harbor of all.

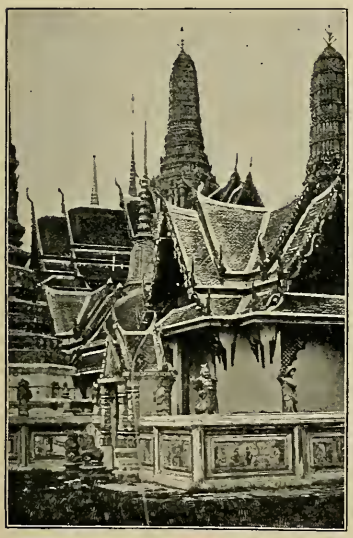

FIG. 213.
A view in the palace grounds at Bangkok, Siam.

Nearly all this peninsula, together with the part of Indo-China called Burmah, belongs to England, through whose influence roads and railways have been built and manufacturing carried on.

One of the chief reasons why England holds India is for the important crops raised there. Cotton, one of the principal products,

is shipped to England to be made into cloth, and then some of this cloth is shipped back to India and sold. Where else have we found a similar situation?

Wheat is another great product, and since England cannot raise enough of that food for herself, she secures some of it from India. Other crops are poppies, from which opium is made, silk, rice, tea, coffee, and sugar.

The peninsula east of India, called Indo-China, and the East Indian Islands south of it, are other places that Columbus wished to reach. Here are found precious stones, pepper, such spices as nutmeg and cinnamon, and other valuable products, which were carried by caravans to Europe long before the time of Columbus. Many of these products are now shipped from SINGAPORE, an English city on an island at the southern end of the Malay peninsula. The greatest city in Indo-China is BANGKOK, the capital of the kingdom of Siam.

REVIEW QUESTIONS AND SUGGESTIONS

I. Southwestern Asia. QUESTIONS. — (1) What part of Asia has had the greatest influence upon the civilized world? Tell about it. (2) To what nation does Palestine belong? (3) What other parts of Asia belong to it? (4) Tell about Mecca. (5) Describe Arabia. (6) How do the Arabians live? (7) What do you know about Persia? (8) How do people travel in those countries?

SUGGESTIONS. — (9) What is meant by the date 1900? (10) What buildings in your neighborhood have been erected in the memory of Christ? (11) What stories in the Bible have you read that tell about places mentioned in this book or on the map? (12) What reasons can you suggest why the Turks have not taken possession of the interior of Arabia, as well as of the coast? (13) Does your grocer sell Mocha coffee? (14) Examine a Persian or Turkish rug. (15) Learn how camels are especially fitted to live in desert countries.

II. Siberia. QUESTIONS. — (16) Point toward Siberia. (17) Tell about the climate. (18) In what occupations are the people engaged? (19) How does Siberia compare in size with Russia?

SUGGESTIONS. — (20) What advantage will the railway be to Russia? (21) How does that railway compare in length with those reaching across the United States? (22) What object do you see in having the eastern terminus, Port Arthur, so far south?

III. Chinese Empire and Korea. QUESTIONS. — (23) Name some of the arts that we have learned from the Chinese. (24) What has made them so backward? (25) What special ports are open to American traders? (26) In what part of China do most of the people live? Why there? (27) What are the principal products? (28) What kind of a government has China? (29) Tell about Korea.

SUGGESTIONS. — (30) How can you distinguish a Chinaman from other men? (31) How does the number of people in China compare with the number in the whole of Europe? (See the table on p. 262.) (32) Write a story telling some of the differences between life in America and in China. (33) Draw the two chief rivers in China. (34) How might railways in China help to prevent the awful famines that they have there? (35) Find out about Confucius. About the Great Wall of China.

IV. Japan. QUESTIONS. — (36) Where is Japan? (37) In what way have the Japanese been like the Chinese? (38) How have they differed? (39) Why are they called an artistic race? (40) What are their chief products? (41) Name and locate the chief cities.

SUGGESTIONS. — (42) Make a collection of Japanese articles, as paper napkins, fans, etc. (43) Examine them to see in what respect they are artistic. (44) Collect pictures of Japanese houses and people.

V. India and Indo-China. QUESTIONS. — (45) What nation owns India? (46) What rivers in northern India? (47) Locate the chief cities. (48) What are the products? (49) What advantages does England enjoy in owning India? (50) Name the peninsula east of India. (51) What comes from there? (52) Find Singapore.

SUGGESTIONS. — (53) How far was Columbus from India when he discovered America? (54) What route should he have taken if he had continued his voyage to India? (55) What is the shortest route from Bombay to London? Through what waters would a vessel pass?

VI. REVIEW. — (56) Draw an outline map of Asia and put in the boundary lines of the principal countries; also the rivers, mountains, and cities. (57) Find out about foreign missions to Asia.

For REFERENCES, see page 261.

XX. AFRICA

Map Questions. — (1) What continent does Africa most resemble in shape? (2) In what parts are the chief mountain ranges? (3) Find the main slopes on the continent by a study of the rivers. (4) Name and trace the three largest rivers. (5) About how much of Africa lies in the torrid zone? (6) How does its coast line compare with that of Europe as to regularity? (7) What influence must that have upon the harbors?

The Dark Continent. — Although Africa is so near Europe that they almost join at the Strait of Gibraltar, and although it is one of the oldest continents that history tells about, it is the least known of them all.

There are several reasons for this. In the first place, south of the Mediterranean Sea is a broad desert, extending entirely across the continent. This, a part of which is called the Sahara Desert (Fig. 69), is about a thousand miles wide, and very difficult to cross.

Far south of this desert, for more than a thousand miles, the country is covered with a forest where the rainfall is heavy; and near the equator the vegetation is so rank that an almost impenetrable jungle is formed, like the Amazon jungle. It is inhabited by large and fierce animals, such as the elephant, tiger (Fig. 111), and lion.

The rivers offer further obstacles to travel. The continent is mainly a plateau, varying from one-fourth to one and one-half miles in height; and its rivers on approaching the ocean have numerous rapids and falls, so that boats cannot make their way up-stream.


EUROPE
ASIA
AFRICA
ATLANTIC OCEAN
INDIAN OCEAN
Mediterranean Sea
Caspian Sea
Red Sea
Gulf of Guinea
Gulf of Aden
Strait of Gibraltar
Suez Canal
Strait of Bab-el-Mandeb
Cape of Good Hope
Cape Guardafui
Mozambique Channel
LEGEND.
Pink is used on British Territory
Purple is used on French Territory
Green is used on German Territory
AZORES (Port.)
MADEIRA IS. (Port.)
CANARY IS. (Sp.)
CAPE VERDE ISLANDS (Port.)
ASCENSION I. (Br.)
ST. HELENA (Br.)
SARDINIA
SICILY
BARCA
TRIPOLI
FEZZAN
Libyan Desert
Nubian Desert
EGYPT
ARABIA
NUBIA
ABYSSINIA
SOKOTRA
MOROCCO
ALGERIA
Algiers
Fez
Morocco
Tripoli
Alexandria
Cairo
Port Said
Suez
Wady Halfa
Meccа
Suakin
Massaua
SPANISH TERRITORY
TROPIC OF CANCER
SAHARA
FRENCH TERRITORY
SENEGAL
St. Louis
Timbuktu
Dakar
Cape Verde
Bathurst
Niger R.
L. Chad
Abeshr
Omdurman
Khartum
EGYPTIAN SUDAN
Gondokoro
Gondo
DARFUR
WADAI
KORDOFAN
Gondar
FRENCH SOMALILAND
Fashoda
Adis Abeba
BR. SOMALILAND
ITALIAN SOMALILAND
SUDAN
UPPER GUINEA
NIGER TERRITORIES
Freetown
SIERRA LEONE
LIBERIA
Monrovia
Asaba
KAMERUN
Duala
SPAN. TER.
FRENCH
Libreville
EQUATOR
Ruwenzori Mts.
BRITISH EAST AFRICA
Victoria Nyanza
Mt. Kenia
Kongo R.
KONGO STATE
Brazzaville
Boma
Stanley Pool
Kilimanjaro
Mombasa
SEYCHELLES IS. (Br.)
Zanzibar
Dar-es-Salaam
AMIRANTE IS. (Br.)
GERMAN EAST AFRICA
LOWER GUINEA
Tanganyika Lake
Loanda
Benguela
PORTUGUESE WEST AFRICA
Nyassa Lake
RHODESIA
Zambesi R.
Salisbury
Mozambique
PORTUGUESE E. AFRICA
GERMAN SOUTH-WEST AFRICA
Walfisch Bay (Br.)
Windhoek
Tananarivo
MAURITIUS I. (Br.)
REUNION OR BOURBON I. (Fr.)
MADAGASCAR
Lourenco Marquez
TROPIC OF CAPRICORN
Angra Pequena
Johannesburg
Pretoria
TRANSVAAL
ORANGE FREE STATE
ZULULAND
NATAL
Orange R.
Kimberley
Bloemfontein
Pietermaritzburg
CAPE COLONY
Port Elizabeth
Cape Town
Comparative Area
PENN.
45,215 Square Miles.
Scale of Miles
500 1000 1500
Capitals: ⊙ Other Cities :
40° Longitude West 20° from Greenwich 0°
40° Longitude East 60° from Greenwich 80°
M.-N. Co.

FIG. 214.

FIG. 215.

The Great Pyramid and the Sphynx. What animals are those standing on the desert sands near the Sphynx?

Not only are there deserts, unnavigable rivers, and dense forests with fierce animals, but there are hordes of savages belonging to the black race. It was from Africa that *negroes* were first brought to our country as slaves, and on that account those now here are often called Africans.

Here, then, are several reasons why we know so little about Africa, which, because of this, and because so many blacks live there, is sometimes called the "dark continent."

Northern Africa. — The African side of the Mediterranean Sea, being so close to Asia and Europe, has long been settled by the white race. Many of the inhabitants

are Arabs, who, being believers in Mohammed, still make pilgrimages to Mecca in Arabia, like other followers of that prophet.

The best-known country in this section is Egypt, and CAIRO, its capital, is the largest city in Africa, being about twice the size of New Orleans. ALEXANDRIA is the chief Egyptian port.

This is the country over which the Pharaohs, the kings of Egypt, used to rule; and the ruins of the immense pyramids and monuments that they built thousands of years ago may still be seen. Here, the Bible tells, Moses once lived; and Joseph also. What stories do you remember about them?

Most of Egypt is a desert country, like Arabia on the one side and the Sahara Desert on the other. The Nile River flows through this desert, and every year the heavy floods, from the mountains of Abyssinia and the forest country near the equator, cause it to rise higher and higher until it overflows its banks. These floods, spreading out over the flood plain and level delta of the Nile, irrigate the land.

As in other rivers, the water carries with it an abundance of mud, which settles in a thin layer of rich soil upon the flood plain, making it so fertile that excellent crops of cotton, sugar-cane, and grain can be raised after the water is gone. By this means millions of people obtain food, although they live in a desert region.

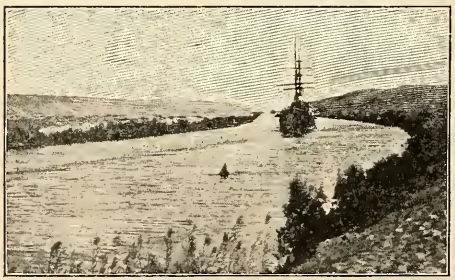

FIG. 216.
A ship passing through the Suez Canal.

The eastern part of Egypt includes the Isthmus of Suez, which connects Africa with Asia. Because of this narrow neck of land, ships sailing from Europe to Asia were compelled to go all the way round Africa; but in 1869 a canal one hundred miles long was completed across the isthmus, so that vessels can now make a short cut. Estimate how many miles are saved by the Suez Canal in going from London to Calcutta.

Name the countries west of Egypt along the Mediterranean coast. What are their capitals? Most of them, like Egypt itself, are controlled by countries of Europe. Their products are similar to those on the northern side of the Mediterranean. What are some of them?

FIG. 217.

A family camped on an oasis in the desert of Morocco.

On the desert of Sahara few people are able to live. Some parts are sandy plains, while others are rocky and hilly, and in places even mountainous. But here and there, as in Arabia, are oases where water comes from underground, so that grass and date palms are able to grow. Sometimes these oases are so large that villages are built upon them; and the caravans that cross the desert to bring ivory and other products from the south, make their stops at these places. Some of these caravans consist of hundreds of camels, so that there is need of much food and water.

Central Africa. — Until a few years ago this was a wilderness that no civilized man had ever visited; but now much of it has been explored. The natives are mainly savage blacks; and the Arabs, who go there to purchase ivory, still carry large numbers of them away as slaves.

The northern part is called the Sudan. Near the borders of the Sahara the country is a desert; but this condition gradually changes until, farther south, the land is covered with a dense tropical forest, for the rains are heavy near the equator. In this region live the lion, rhinoceros, giraffe, and elephant, the latter being killed for the sake of its ivory tusks. Some of the forest woods are valuable, and since the rubber tree flourishes there, as along the Amazon, rubber is another product. See page 202.

The two great rivers of this region are the Niger, north of the equator, and the Kongo, south of it. They are the main roads leading inland, although their falls and rapids greatly interfere with travel. Throughout that entire region there are almost no wagon roads, so that goods must be carried either on the rivers or over paths or trails in pack trains. But this situation is improving as the nations of Europe obtain more and more control. At the present time, several European countries claim parts of Africa, England having a very large share, as you will see from the map, and they are introducing civilized laws, railways, and other improvements.

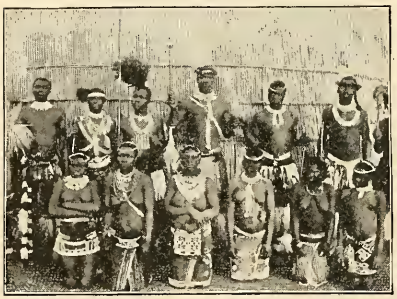

FIG. 218.
Kaffirs, South African savages, in full dress.

South Africa. — Southern Africa is the best-developed section of the continent. It was originally settled by the

Dutch, though England has taken possession of a portion of it. Part of it is a high plateau, with a warm temperate

FIG. 219.
A group of ostriches in South Africa.

climate, having many of the same products as our own country. Most of the people are engaged in farming and ranching, producing grain, wool, and hides. Ostrich farming is an important industry in Cape Colony, the beautiful feathers of the male bird being very valuable.

FIG. 220.
A picture of a diamond mine at Kimberley.

JOHANNESBURG is the centre of the richest gold-mining region in the world, and more diamonds are obtained from near KIMBERLEY than from any other part of the globe. Portions of southern Africa have long been settled

by Europeans and much of it is now owned by England, the oldest colony being Cape Colony, the capital of which is CAPE TOWN. Consequently many railways and good wagon roads have been built, and many other advances have been made.

REVIEW QUESTIONS. — (1) Why is so little known about Africa? (2) Why is it called the "dark continent"? (3) Which is the best-known country in northern Africa? (4) Name and locate its two chief cities. (5) Tell about the Nile River. (6) About the Suez Canal. (7) About the Sahara Desert. (8) Where is the Sudan? What animals live there? (9) What two great rivers are in Central Africa? (10) How are goods carried from place to place? (11) What influence are the nations of Europe having upon Africa? (12) What climate has Southern Africa? What are the occupations of the people?

SUGGESTIONS. — (1) What reasons can you give why Timbuktu should be an important trade centre? (2) The caravans composed of camels travel at the rate of about sixteen miles per day. How long would it probably take for a caravan to travel from Timbuktu to Tripoli on the Mediterranean coast? (3) One camel can carry about four hundred pounds. How many tons could a caravan of six hundred camels carry? (4) What are some of the dangers of a journey across the desert? (5) Beginning with the western Sahara, trace the desert country that extends across Africa and Asia. (6) Why should the two largest cities in Africa be located at or near the mouth of the Nile River? (7) Find some object made of ivory and show it to the class. (8) Examine an ostrich feather and a diamond. (9) Why are there no tributaries to the northern half of the Nile? What part of the river, then, probably has most water? (10) Find out about the war between the Boers (those living in the South African Republic and Orange Free State) and the British. (11) Draw an outline map of Africa and put in the main rivers and cities.

For REFERENCES, see page 261.


Longitude from Greenwich
ASIA
Manila
LUZON
PHILIPPINE ISLANDS (To U.S.)
MINDORO
SAMAR
PALAWAN
Sulu Sea
MINDANAO
SULU IS.
Celebes Sea
Gulf of Siam
Saigon
MALAY PENINSULA
Singapore
Malacca Strait
SUMATRA
Sunda Strait
Java Sea
Banka I.
Benkulen
Batavia
JAVA
TIMOR
EAST INDIES
CELEBES (Dutch)
MOLUCCA OR SPICE IS. (Dutch)
NEW GUINEA (Dutch)
(Ger.)
Arafura Sea
Torres Strait
C. York
Palmerston
LADRONE OR MARIANA IS. (Ger.)
GUAM (To U.S.)
WAKE I. (To U.S.)
HAWAIIAN IS. (To U.S.)
CAROLINE ISLANDS (Ger.)
MARSHALL ISLANDS (Ger.)
BISMARCK ARCHIPELAGO (Ger.)
SOLOMON ISLANDS
EQUATOR
PHOENIX IS. (Br.)
SAMOA
NEW HEBRIDES (Independent)
FIJI ISLANDS (Br.)
NEW CALEDONIA (Fr.)
TROPIC OF CAPRICORN
Coral Sea
GREAT BARRIER REEF
Gulf of Carpentaria
CAPE YORK PENINSULA
ARNHEM LAND
NORTHERN TERRITORY
WESTERN AUSTRALIA
QUEENSLAND
AUSTRALIA
SOUTH AUSTRALIA
Salt Lakes
L. Eyre
Darling
Brisbane
Perth
Adelaide
Great Australian Bight
NEW SOUTH WALES
Sydney
Dalgety
VICTORIA
Melbourne
Ballarat
Bass Strait
TASMANIA
Hobart
INDIAN OCEAN
PACIFIC OCEAN
Auckland
NORTH ISLAND
NEW ZEALAND
Wellington
SOUTH ISLAND
Cook Strait
Dunedin
Comparative Area
PENN.
45,215 Square Miles.
AUSTRALIA AND ISLANDS OF THE PACIFIC
Scale of Miles.
500 1000 1500
Capitals: ⊙ Other Cities: •
Capital of Australia thus: ⊛
THE W.-N. CO.

FIG. 221.

XXI. AUSTRALIA, THE EAST INDIES, PHILIPPINES, AND THE OTHER ISLANDS OF THE PACIFIC

Map Questions. — (1) Find Australia on a globe and show how you would reach it from New York in a vessel. Through what waters would you pass? (See Fig. 120.) (2) From San Francisco? From London? (3) In what part are most of the mountains? (4) The rivers? (5) The cities? (6) In what zones is Australia? (7) Will there be any cold winter on this continent? (8) Look on a globe to see what other continents are in the same zones.

(9) What are the principal islands of the East Indies? Find Batavia. (10) In what direction are the Philippine Islands from Australia? (11) Estimate the distance. (12) Find the Hawaiian Islands.

I. Australia. — The names of the three eastern divisions of Australia — Victoria, New South Wales, and Queensland — suggest the country to which this continent belongs. Which is it? As has been done in Canada, the various sections of Australia have been joined into one confederation similar to our own confederation of states.

Australia is the smallest of the continents, being about the size of the United States, not including Alaska. It is a low plateau, with the chief mountain range on the eastern side. These mountains have much influence on the climate; for, since the prevailing winds are from the southeast, as they reach this range, and rise to pass over it, they grow cooler and lose most of their moisture. If the mountains were on the western side, as the Andes are

in South America, nearly the whole country might be well watered, like the Amazon Valley. As it is, however, the eastern coast of Australia has abundant rain, while farther westward it becomes drier, until, at a distance of one hundred and fifty miles from the coast, farming is almost impossible.

What about the country farther west? With what part of Africa should it be compared? Where must the chief

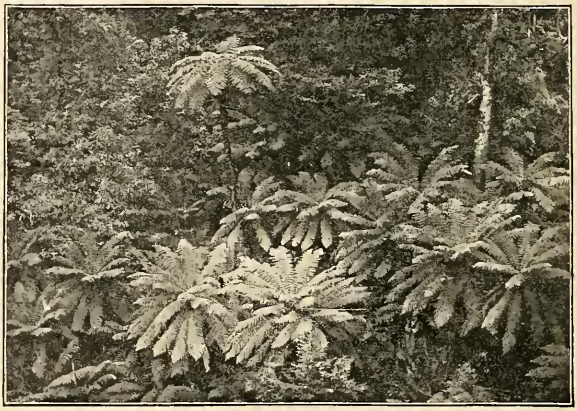

FIG. 222.
A forest of tree ferns in Australia.

rivers be? Where might we expect to find salt lakes? The best farm land? The principal cities and most of the people?

Now examine the map to see if you are right. Where is the large desert? (It is dotted.) What is the name of the main river? There is often so little rain, even on the lower part of the Murray River Basin, that the river grows smaller toward its mouth; and its chief tributary, the Darling, dries up almost entirely.

When the English began to colonize this country, they found it inhabited by a very low class of savages; and the plants and animals were found to be different from those elsewhere. A great part of the interior was covered with a low bush, called "scrub," having hard, prickly leaves and often growing so dense that it was difficult for one to make his way through it. It caused the country to look desolate indeed.

There were none of the fierce animals common to other countries, the largest being the kangaroo, which is furnished with a sack or pouch for carrying its young. Instead of running on all fours, it jumps along on its hind legs, using its tail for support.

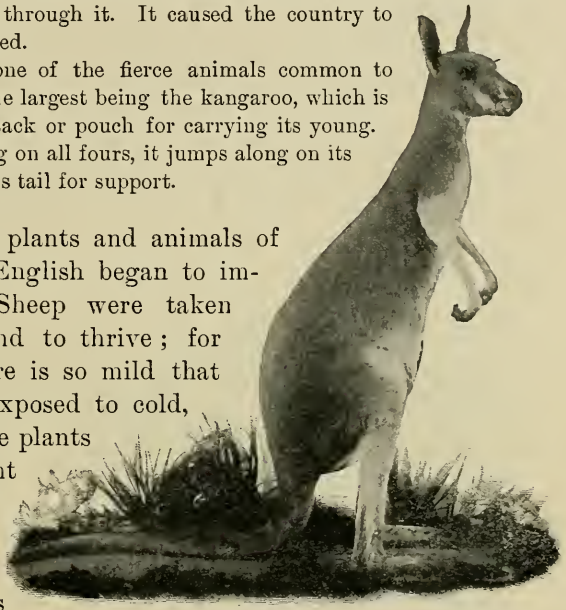

FIG. 223.
An Australian kangaroo.

Finding the plants and animals of little use, the English began to import some. Sheep were taken there and found to thrive; for the temperature is so mild that they are not exposed to cold, and some of the plants furnish excellent food. Consequently, great sheep ranches or *sheep runs*, as they are called there, have been established. The best sections for this purpose are Victoria and New South Wales, where wool has become one of the chief exports. Indeed, Australian wool is the best in the world.

The imported cattle have likewise multiplied, so that hides and meat are produced in abundance. Wheat and corn also flourish, and many fruits, such as we know, are now plentiful in that region.

The presence of mountains suggests that metals might exist there, which is the case. For many years Australia has ranked as one of the most important gold-producing countries of the world.

Since these industries have become very extensive, especially in the rainy southeastern part, we see why several great cities have grown up in that section. The largest is MELBOURNE, the capital of Victoria, which is nearly as large as Boston. The next is SYDNEY, the capital of New South Wales, nearly as large ; and the third is ADELAIDE, the capital of South Australia.

An island, Tasmania, just south of Australia, is owned by the British, and has almost the same industries as Victoria.

The New Zealand Islands are also British, and in the climate and the customs of the people they resemble Australia. What is the capital? What other city is found there? Do you remember the geysers for which the Yellowstone National Park is noted (p. 178)? New Zealand and Iceland are the only two other parts of the world where geysers are found.

Manufacturing is not yet greatly developed, so that quantities of wool, hides, metals, etc., are exported, going mainly to England, since these are colonies of Great Britain. Some of the imports that must be received in return you can probably name.

II. The East Indies. — Between Australia and Asia are a large number of islands, many of them too small to place upon the map. What are the names of some of the largest of this group, or archipelago, known as the East Indies? The one that you have probably heard about most often is Java, from which the Java coffee comes.

Among the forests of these islands are many different kinds of valuable tropical woods. Sugar, tobacco, pepper, spices, and precious stones are other valuable products.

These islands, like those of the Japanese Empire, are the crests of mountains in the sea. Among them are many very active volcanoes, some of them having caused terrible destruction by their frightful eruptions. The islands belong to European countries, and you will find the names of these countries marked on the map.

III. The Philippine Islands. — The principal city on the Philippine Islands is MANILA, on Luzon Island, where Admiral Dewey destroyed the Spanish fleet.

Notice (Fig. 203) that they lie between the Japanese Islands and the East Indies, both of which were said to be mountain ranges in the sea. The Philippines are also mountains, forming a part of the same chain.

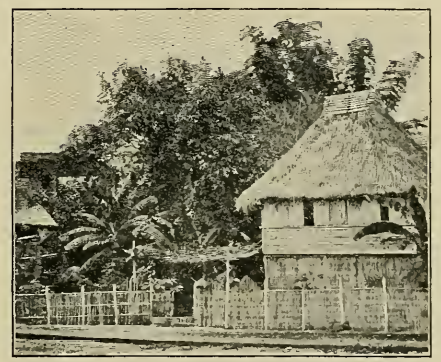

FIG. 224.
A native house in Manila. In order to be well above the damp ground, the people live in the upper part. Notice the bamboo fence.

There are valuable kinds of wood in the forests, and many mineral deposits; but these were never much used by the Spaniards. The chief products have been sugar, tobacco, and hemp, which is used in making ropes. Now that the United States is in control of the islands, it is probable that their mineral and other resources will be developed.

On these islands dwell several different races. There are still many savages there, especially in the dense forests of the interior (Fig. 99). Some of them are called Negritos or little negroes. On the Sulu Islands are Mohammedans called Moros. The Tagalogs belong to the more advanced tribes, who have learned the arts of civilization from the Spaniards.

IV. Islands of the Pacific. — There are many hundreds of islands in the Pacific Ocean, some of them being tiny coral islands, others large and mountainous. They are all located where mountain ranges or volcanic peaks rise from the great plain of the ocean floor.

Find the Fiji Islands. They are also British. What other group of small islands do you see in that region? Find the Samoan Islands. One of these belongs to the United States. What large island is just north of Australia? In what zone does it lie? One part is British, one part Dutch, and one part German. All of its products are tropical, and it is covered with a dense forest and inhabited by fierce savages. Very few Europeans live there.

Among the islands of the Pacific we must not forget to mention the HAWAIIAN ISLANDS, for they now form a part of our own country. They are situated in the mid-Pacific on the way from San Francisco to Australia, and consist of a number of islands, the largest being Hawaii. All of them are volcanic, and on Hawaii are two of the largest volcanoes in the world (Fig. 101). Being in the torrid zone, their climate is warm enough for sugar raising, and this is one of the principal industries of the islands. Where else have we found this industry? HONOLULU is the capital and largest city.

REVIEW QUESTIONS AND SUGGESTIONS

I. Australia. QUESTIONS. — (1) To what country does Australia belong? (2) How does it compare in size with the United States? (3) How does the mountain range on the east affect the climate? (4) Which, then, is the most valuable part of the country? (5) Tell about the native plants and animals. (6) What animals and plants have been imported? (7) What industries have resulted? (8) Name the principal exports. (9) Locate the chief cities.

SUGGESTIONS. — (10) Sketch Australia, putting in the Murray River and the principal cities. (11) What other places in the world are noted for sheep and cattle raising? (12) For gold mining? (13) Read about the great trouble the imported rabbits have caused in Australia. (14) Where are the desert countries of the world? Make a sketch map to show them.

II. East Indies. QUESTIONS. — (15) Name several of the larger islands of the East Indies. (16) What are the products?

SUGGESTIONS. — (17) Why were they named the East Indies? (18) Find what spices are used in cooking at your home. (19) Make a collection of spices, trying to find where each kind came from. (20) See on the map (Fig. 221) to what European countries each of the larger islands belongs. (21) Find where the tea and coffee used at your home came from. By what route are they probably brought?

III. Philippine Islands. QUESTIONS. — (22) Where are the Philippine Islands? (23) Name the principal city. (24) What has recently made it famous? (25) What are the names of the largest islands? (26) How far is Manila from China? (27) What races occupy these islands?

SUGGESTIONS. — (28) Collect some Manila hemp rope. (29) Find out about the battle of Manila Bay and also about the war with the Filipinos. (30) Collect pictures from the Philippines.

IV. Islands of the Pacific. QUESTIONS. — (31) Find Tasmania; New Zealand; the Fiji Islands. (32) What large island lies north of Australia? Tell about it. (33) Tell about the Hawaiian Islands.

SUGGESTIONS. — (34) Find out something about the Fiji Islands. (35) About the Hawaiian Islands. (36) Find out some events that have happened on the Samoan Islands.

For REFERENCES, see page 261.

BOOKS OF REFERENCE[1]

McM. means The Macmillan Co., New York; Ginn, Ginn & Co., Boston, Mass.; A. B. C., American Book Co., New York; S. B. C., Silver, Burdett & Co., New York; Heath, D. C. Heath & Co., Boston, Mass.; E. P. C., Educational Publishing Co., Boston, Mass.; Scribner, C. Scribner & Sons, New York.

Methods, Aids, etc.

Geikie, "The Teaching of Geography" (McM., $0.60); King, "Methods and Aids in Geography" (Lee & Shepard, Boston, $1.20); Parker, "How to Study Geography" (D. Appleton & Co., New York, $1.50); Nichols, "Topics in Geography" (Heath, $0.65); Trotter, "Lessons in the New Geography" (Heath, $1.00); McMurry, "Special Method in Geography" (Public School Publishing Co., Bloomington, Ill., $0.50); McCormick, "Suggestions on Teaching Geography" (same publisher, $0.50); McMurry, "A Course of Study in Geography" (Herbartian Society, University of Chicago); Frye, "The Child and Nature" (Ginn, $0.80); Frye, "Teacher's Manual of Methods in Geography" (Ginn, $0.50); Redway, "Manual of Geography" (Heath, $0.65); Morton, "Lessons on the Continents" (E. L. Kellogg & Co., New York, $0.20; McCormick, "Practical Work in Geography" (A. Flanagan, Chicago, Ill., $0.80).

Journal of School Geography (R. E. Dodge, Teachers' College, Columbia University, New York City, $1.00 per year); *National*

[1] These references are not intended to be exhaustive, but, rather, suggestive. Most, if not all, are to first-class sources. The attempt has been to make few references, assuming that the teacher will have others in mind. While there may seem to be many here, a careful examination will reveal the fact that really few books are referred to. Some of those mentioned at the end of Part I will be found useful for Part II also.

Geographic Magazine (Washington, D. C., $2.00; includes membership to Society); Bulletin, *American Bureau of Geography* (Winona, Minn., $1.00; includes membership to Bureau); "The Statesman's Year Book," published each year, gives latest statistics, etc. (McM., $3.00); Mill, "Hints to Teachers and Students on the Choice of Geographical Books" (Longmans, Green & Co., New York, $1.25); Ritter, "Comparative Geography" (A. B. C., $1.00); Shaler, "Nature and Man in America" (Scribner, $1.50); Guyot, "Earth and Man" (Scribner, $1.75); Champlin, "Cyclopedia of Common Things" (H. Holt & Co., New York, $2.50); Champlin, "Cyclopedia of Persons and Places" (same publisher, $2.50); Murché, "Science Readers" (McM., I and II, $0.25 each, III and IV, $0.40 each, V and VI, $0.50 each); Lange, "Handbook of Nature Study" (McM., $1.00); Yonge, "Little Lucy's Wonderful Globe" (McM., $0.50); Strong, "All the Year Round" (Ginn, three volumes, $0.30 each); Carpenter, "Geographical Readers" (A. B. C., Vol. II, Asia, $0.60; volume on North America, $0.60); Guyot, "Geographical Reader" (A. B. C., $0.60); Gonner, "Commercial Geography" (McM., $0.75); Tilden, "Grammar School (Commercial) Geography" (T. R. Shewell & Co., Boston, $1.25); Chisholm, "Commercial Geography" (Longmans, Green & Co., New York, $1.00); Mill, "General Geography" (McM., $0.90); Lyde, "Man and His Markets" (McM., $0.50); Herbertson, "Man and His Work" (McM., $0.60); Pratt, "American History Stories" (E. P. C., four volumes, $0.36 each); Pratt, "Stories of Colonial Children" (E. P. C., $0.40); Shaler, "First Book in Geology" (Heath, $0.60); Davis, "Physical Geography" (Ginn, $1.25); Tarr, "Elementary Geology" (McM., $1.40); Tarr, "Elementary Physical Geography" (McM., $1.40); Tarr, "First Book of Physical Geography" (McM., $1.10). Excellent selections may also be found in many school readers.

Section I. Form and Size of the Earth.—Andrews, "Seven Little Sisters," section on "The Ball Itself" (Ginn, $0.50); Irving, "Life and Voyages of Christopher Columbus" (G. P. Putnam's Sons, New York, $1.75); for Columbus, Magellan, etc., see various school histories. Also, poem on "Columbus" by Tennyson D'Anvers, "Science Ladders," Vol. I (E. P. C., $0.40); Gee, "Short Studies in Nature Knowledge," section on "The Great Globe Itself" (McM., $1.10); Ritter, Comparative Geography," First Part (A. B. C., $1.00).

Section II. Daily Motion of the Earth and its Results. — Redway, "Manual of Geography," Chapter VI (Heath, $0.65); "Daybreak" (poem), Longfellow.

Section III. The Zones. — Eggleston, "Stories of American Life and Adventure," section on "Adventures in Alaska" (A. B. C., $0.50); Andrews, "Seven Little Sisters," sections on "The Little Brown Baby," "Agoonack, the Esquimau Sister," and "How Agoonack Lives" (Ginn, $0.50); Schwatka, "The Children of the Cold" (E. P. C., $1.25); Ballou, "Footprints of Travel," Chapters XXIX and XXX (Ginn, $1.00); King, "The Picturesque Geographical Readers," First Book, Part 2 (Lee & Shepard, Boston, $0.50).

Section IV. Heat within the Earth and its Results. — Tarr, "First Book of Physical Geography," Chapters I (p. 8), XIX, and XX (McM., $1.10); Trotter, "Lessons in the New Geography," pp. 16–17 (Heath, $1.00); Redway, "Manual of Geography," Chapter VII (Heath, $0.65); Kingsley, "Madam How and Lady Why," section on "Volcanoes" (McM., $0.50); Gee, "Short Studies in Nature Knowledge," Chapter XI (McM., $1.10); Kelly, "Leaves from Nature's Story Book," Vol. III, "The Records of the Rocks" (E. P. C., $0.40).

Section V. The Continents and Oceans. — Andrews, "Seven Little Sisters" (Ginn, $0.50); Ballou, "Footprints of Travel" (Ginn, $1.00); Gee, "Short Studies in Nature Knowledge," Chapter IV, "The Sea" (McM., $1.10); Kelly, "Leaves from Nature's Story Book," Vol. III, "A Visit to the Bottom of the Ocean" (E. P. C., $0.40); Shaler, "The Story of our Continent," section on "Coral Reefs" (Ginn, $0.75); Tarr, "Elementary Geology," p. 251 (McM., $1.40); D'Anvers, "Science Ladders," Vol. III, Lesson VIII (E. P. C., $0.40). Poems: Shelley, "A Vision of the Sea"; Longfellow, "The Secret of the Sea"; Longfellow, "The Wreck of the Hesperus"; Holmes, "The Chambered Nautilus"; Byron, "The Ocean."

Section VI. Maps. — For References, see bottom of page 110.

Section VII. North America. — Shaler, "The Story of Our Continent" (Ginn, $0.75); Lyde, "North America" (McM., $0.50); King, "The Picturesque Geographical Readers," Second Book (Lee & Shepard, Boston, $0.72).

Section VIII. The United States. — Brooks, "Century Book for Young Americans" (The Century Co., New York, $1.50); Brooks, "The Story of the United States" (The Lothrop Publishing Co.,

Boston, $1.50); Channing, "Students' History of the United States" (McM., $1.40); Ballou, "Footprints of Travel," Chapters I and XXV (Ginn, $1.00); Gannett, "The United States," Stanford's Compendium of Geography (Scribner, $4.50); King, "The Picturesque Geographical Readers," Second Book (Lee & Shepard, Boston, $0.72); "Our Country" (poem), Holmes.

Section IX. New England. — Eggleston, "Stories of American Life and Adventure," "Stories of Whaling" and "A Whaling Song" (A. B. C., $0.50); Rocheleau, "Great American Industries," Book I, "Granite," "Marble," and "Slate"; Book II, "Cotton Manufacturing" and "Lumbering" (A. Flanagan, Chicago, each $0.50); Chase and Clow, "Stories of Industry," Vol. I, "Lumbering," "Ship Building," "Marble and Granite," "Slate and Brick"; Vol. II, "Manufacturing," "Fisheries," and "Whaling" (E. P. C., each $0.40); King, "The Picturesque Geographical Readers," Third and Fourth Books (Lee & Shepard, Boston, each $0.56); Wilson, "Nature Study in Elementary Schools," Second Reader, "The Tree," by Björnson (McM., $0.35). Poems: Whittier, "Mogg Megone"; "Pentucket"; "The Bridal of Pennacook"; "The Merrimack"; The Norsemen"; Longfellow, "The Woods in Winter"; "The Building of the Ship"; "The River Charles"; Emerson, "Boston."

Section X. Middle Atlantic States. — Chase and Clow, "Stories of Industry," Vol. I and Vol. II, various stories on Iron, Coal, Mining, Manufacturing, Farming, etc. (E. P. C., each $0.40); Rocheleau, "Great American Industries," Book I, sections on "Coal Mining," "Natural Gas," "Petroleum," and "Iron" (A. Flanagan, Chicago, $0.50); Eggleston, "Stories of American Life and Adventure," section on "A Story of Niagara" (A. B. C., $0.50); King, "The Picturesque Geographical Readers," Third and Fourth Books (Lee & Shepard, Boston, each $0.56).

Section XI. The Southern States. — Rocheleau, "Great American Industries," Book II, section on "Cotton and Sugar" (A. Flanagan, Chicago, $0.50); King, "The Picturesque Geographical Readers," Fourth Book (Lee & Shepard, Boston, $0.56).

Section XII. The Central States. — Garland, "Boy Life on the Prairie" (McM., $1.50); McMurry, "Pioneer Stories of the Mississippi Valley" (Public School Publishing Co., Bloomington, Ill., $0.50); Rocheleau, "Great American Industries," Book II, sections on "Grain

Raising," "Wheat Raising," and "Milling" (A. Flanagan, Chicago, $0.50); King, "The Picturesque Geographical Readers," Fourth Book (Lee & Shepard, Boston, $0.56). Poems: "When the Frost is on the Punkin," Riley; "Knee Deep in June," Riley; "The Prairies," Bryant; "The Hunter of the Prairies," Bryant.

Section XIII. The Western States. — Ballou, "Footprints of Travel," Chapter XXV (Ginn, $1.00); Eggleston, "Stories of American Life and Adventure," sections on "How Fremont Crossed the Mountains," "The Finding of Gold in California," "Descending the Grand Cañon," and several Indian stories (A. B. C., $0.50); Chase and Clow, "Stories of Industry," Vol. I, several sections on "Mines and Mining" (E. P. C., $0.40); King, "The Picturesque Geographical Readers," Fifth Book (Lee & Shepard, Boston, $0.56); "The Pass of the Sierra" (poem), Whittier; "In the Yosemite Valley," Joaquin Miller.

Section XIV. Alaska. — Ballou, "Footprints of Travel," Chapter XXVI (Ginn, $1.00); Eggleston, "Stories of American Life and Adventure," "Adventures in Alaska" (A. B. C., $0.50).

Section XV. Countries North of the United States. — Coe, "Our American Neighbors," Chapters I–XII (S. B. C., $0.60); Lyde, "A Geography of North America" (McM., $0.50); Dawson, "Canada and Newfoundland," Stanford's Compendium (Scribner, $4.50); Andrews, "Seven Little Sisters," the two sections on Agoonack (Ginn, $0.50); Schwatka, "The Children of the Cold" (E. P. C., $1.25); Gee, "Short Studies in Nature Knowledge" (McM., $1.10); King, "The Picturesque Geographical Readers," Second Book (Lee & Shepard, Boston, $0.72); "An Arctic Vision," Bret Harte; "Evangeline," Longfellow.

Section XVI. Countries South of the United States. — Coe, "Our American Neighbors," Chapters XIII–XVII (S. B. C., $0.60); Conklin, "Guide to Mexico" (D. Appleton & Co., New York, $1.50); Lyde, "A Geography of North America" (McM., $0.50); Ballou, "Footprints of Travel," Chapters XXIII, XXIV, XXV, XXVII, and XXVIII (Ginn, $1.00); King, "The Picturesque Geographical Readers," Second Book (Lee & Shepard, Boston, $0.72).

Section XVII. South America. — Ballou, "Footprints of Travel," Chapters XXIX–XXXI (Ginn, $1.00); Coe, "Our American Neighbors" (S. B. C., $0.60).

Section XVIII. Europe.—Lyde, "A Geography of Europe" (McM., $0.50); Ballou, "Footprints of Travel," Chapters X–XXII (Ginn, $1.00); Coe, "Northern Europe" (S. B. C., $0.60); Pratt, "Northern Europe" (E. P. C., $0.40); Lyde, "A Geography of the British Isles" (McM., $0.50); King, "The Picturesque Geographical Readers," Sixth Book (Lee & Shepard, Boston, $0.60); Pratt, "Stories of England" (E. P. C., $0.40); Andrews, "Seven Little Sisters," "The Little Mountain Maiden," and "Louise" (Ginn, $0.50). Poems: Alice Carey, "The Leak in the Dike"; Longfellow, "Venice"; "The Belfry of Bruges"; "Nuremberg"; "To the River Rhone"; "To the Avon." Joaquin Miller, "Sunrise in Venice"; "In a Gondola"; "To Florence"; Shelley, "Ode to Naples."

Section XIX. Asia.—Ballou, "Footprints of Travel," Chapters III, VIII, and IX (Ginn, $1.00); Andrews, "Seven Little Sisters," "The Story of Pen-se," also "Gemila" (Ginn, $0.50); Smith, "Life in Asia" (S. B. C., $0.60); Pratt, "Stories of India" (E. P. C., $0.40); Pratt, "Stories of China" (E. P. C., $0.40). Poems by Whittier: "The Holy Land"; "Palestine"; "The Pipes of Lucknow."

Section XX. Africa.—Lyde, "A Geography of Africa" (McM., $0.50); Ballou, "Footprints of Travel," Chapters IX and X (Ginn, $1.00); Badlam, "Views in Africa" (S. B. C., $0.72); Andrews, "Seven Little Sisters," section on "The Little Dark Girl" and "Gemila" (Ginn, $0.50).

Section XXI. Australia, etc.—Ballou, "Footprints of Travel," Chapters II, IV, V, VI, VII (Ginn, $1.00); Kellogg, "Australia and the Islands of the Sea" (S. B. C., $0.68); Pratt, "Stories of Australasia" (E. P. C., $0.40). Poem, "Western Australia," O'Reilly.

SUPPLEMENT

CLIMATE, PLANTS, ANIMALS

FIG. 225.

A map of North America, to show the four plant zones. Notice how irregular the boundaries are. Compare it with the isothermal chart, to see the cause. Also examine the relief map of North America, Figure 121.

Climate. — We have learned in the previous sections that several factors combine to determine the weather and climate of North America. The principal factors are (1) distance from the equator, (2) the changes of season, (3) elevation of the land, (4) distance from the ocean, (5) winds and storms, and (6) ocean currents. All these together determine the temperature and rainfall, which are the two most important elements of climate.

The climate of a region is one of the most important facts concerning it; for where temperature and rainfall are

favorable, plants usually grow luxuriantly. And since plants furnish animals with food, where vegetation is luxuriant, animal life may be abundant.

Since North America extends far north and south, and possesses lofty mountain ranges and enclosed plateaus, it has a great variety of climates, and, therefore, a great variety of plant and animal life (Fig. 225).

Plants of the North. — The northern part of the continent is bitterly cold. In that region there is a vast area where the soil is always frozen, excepting at the very surface, which thaws out for a few weeks in summer. On account of the frost, trees such as we are familiar with cannot grow. Their roots are unable to penetrate the frozen subsoil and to find the necessary plant food. There are some willows, birches, and a few other plants with woody tissue, bark, leaves, and fruit; but instead of towering scores of feet into the air, they creep along the surface like vines, and rise but an inch or two above ground. Only by thus hugging the earth can they escape the fierce blasts of winter and find protection beneath the snow.

FIG. 226.
Arctic poppies growing on the edge of a snow-bank.

A few grasses and small flowering plants grow rapidly, produce flowers, even close by the edge of snowbanks (Fig. 226), and then pass away, all within the few short weeks of summer. Some of these plants produce berries, which after ripening are preserved by the snows; thus, when the birds arrive in the spring, they find food ready for them.

Animals of the North. — The summer development of insects is rapid, like the growth of plants. As the snow melts and the surface thaws, the ground becomes wet and swampy, and countless millions of insects appear. Among them the most common is, apparently, the mosquito. There are few parts of the world where this creature is a worse pest than on the *barrens* of North America and the *tundras* of Europe and Asia, as these treeless, frozen lands are called.

Few large land animals are able to thrive in so cold a climate and where there is such an absence of plant food. The reindeer, or caribou, the musk-ox, polar bear, white fox, and Arctic hare are the largest four-footed land animals (Fig. 227); and the crow, sparrow, and ptarmigan are the most common land birds.

The ptarmigan changes its plumage to white in winter, and other animals of the Arctic, such as the fox, polar bear, baby seal, and hare, are also white. This serves to conceal them, in that land of snow and ice, so that they may hide from their enemies, or steal upon their prey unawares.

The tiny white fox feeds upon birds and other animal food; but the other land animals, except the polar bear, live upon plants, such as berries, grass, and moss. The caribou finds a kind of plant, called "reindeer moss," which grows upon rocks that rise above the deep winter snows. If it were not for this, the reindeer would not be able to live through the long winter.

FIG. 227.

Some of the animals of the North. The great auk had such small wings that it could not fly. It was killed in great numbers by sailors, and has been completely exterminated.

While some animals live upon the land in the Arctic regions, many more have their homes in the sea, because there, excepting at the very surface, the temperature never descends below the freezing point. Therefore, there is plenty of animal life of all sizes, from the very tiniest forms to the whale, the largest animal in the world. During the long, cold winter the surface of the sea freezes over; and then many of the sea animals migrate southward. Even the huge walrus (Fig. 228) moves clumsily toward a more favorable climate. The birds go farthest, especially the geese, ducks, and gulls, which fly to Labrador, New England, North Carolina, and even farther south, to spend the winter where their food is not covered by ice.

Fig. 228.
Walrus on the Arctic floe ice.

Sea birds exist by hundreds of thousands (Fig. 227), building their nests upon rocky cliffs in immense numbers. Indeed, they are so numerous that, when suddenly frightened, as by the firing of a gun, they rise in a dense cloud that obscures the sun. Then, by their cries they produce a din that is almost deafening. In the water live many seals and walruses (Fig. 228), the former being so valuable for their oil and skins that

men go on long voyages to obtain them. The oil comes from a layer of fat, or "blubber," just beneath the skin, that serves to keep out the cold.

The seal is the most common of the Arctic sea animals, and is the principal food of the Eskimo and the huge polar bear. The bear, protected from observation by his white color, stealthily creeps upon his prey, asleep upon the ice; or, he patiently watches until his victim swims within reach, and then seizes him in his powerful claws.

Life on Mountain Tops. — In many respects the life on mountain tops resembles that of the Arctic regions. On the crests of lofty mountains it is cold, and large animals are rare, while the plants resemble those of the cold North (Fig. 234). There are no trees, though creeping willows and birches abound. Indeed, some of the plants are actually the same as those of the North. For instance, on the top of Mt. Katahdin, Maine, some of the plants are of the same species as those thriving in Labrador, Baffin Land, and Greenland. Arctic plants also occur on the mountain tops in North Carolina.

Plants and Animals in Western North America. — A large area in western United States and Mexico has a very slight rainfall, although its temperature is agreeable. This arid area includes most of the territory having less than twenty inches of rain. In some places, however, as near the Pacific coast and upon the mountain tops and high plateaus, there is rain enough for forests to thrive; but in most parts of the Far West the climate is so dry that there are no trees whatsoever. Indeed, some portions of the West are desolate in the extreme and almost devoid of life, both plant and animal; in other words, they are true deserts.

One common plant is the bunch grass, so called because it grows in little tufts or bunches. The sage bush, a plant with a pale green leaf, named because of its sagelike odor,

is found throughout most of this arid region. Other common plants are the mesquite, the century plant with its sharp-pointed leaves, and the cactus with its numerous thorns (Fig. 229). In favorable spots, especially in the warm southwest, the mesquite grows to large size; and the cactus, which in the north is always low and represented by only a few kinds, in the southwest, as in Arizona, grows in great variety and, in some cases, even to the height of trees.

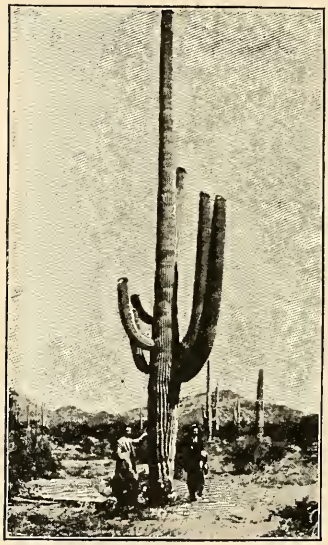

Fig. 229.

Giant cactus in the desert of southwestern Arizona.

Fig. 230.

One of the peculiar plants of the arid lands, growing to the size of a tree in the warm, dry climate of southern Arizona.

On account of the extreme dryness of the climate, these plants have a severe struggle for existence, and adopt peculiar means for protecting themselves. For example, the cactus, unlike other plants, has no leaves. It thus exposes little surface to the air for evaporation. In its great, fleshy stem it stores water to use through the long, dry seasons, while spines protect it from ani-

mals in search of food. The mesquite also protects itself by spines, and in addition has such large roots that the part of the plant under ground is greater than that above. Many of these plants, as the mesquite, are so bitter that they are not eaten by animals.

Animals eat few of the arid land plants except the grasses, which were once the food of the buffalo or bison (Figs. 231 and 236), and are now the support of numerous cattle and sheep. The bison, whose home was on the

FIG. 231.

Photograph of a young bison.

prairies and the arid plains east of the Rocky Mountains, is now gone; and few large animals are left in its place. The cowardly prairie wolf, or *coyote*, and the graceful antelope and the rabbits, are the most abundant (Fig. 232). Among the rabbits is the long-legged jack rabbit, which leaps across the plains with astonishing speed, with its huge ears thrown back so far that they do not retard its progress.

The traveller through the arid lands meets with few more interesting creatures than the prairie dogs, which live in small communities, called prairie-dog towns (Fig. 232). Their homes

FIG. 232.

Some of the animals of the plateaus and mountains of the Far West.

are in the ground and their food consists of grass. They do not venture far from their burrows for fear of the coyotes which may be lurking near; and upon the least alarm they utter a shrill note and tumble headlong into their burrows.

There are birds and some lower animals, as the poisonous tarantula, centipede and scorpion, besides snakes, especially the poisonous rattlesnake (Fig. 232).

The fierce puma or mountain lion still lives among the mountains, and also the ugly cinnamon and grizzly bears (Fig. 232), though the latter are now rare and difficult to find. Deer and elk inhabit the forest-covered mountains of southern Canada and northwestern United States; and among the higher peaks a few mountain goats and sheep still live on the more inaccessible rocky crags (Fig. 232). The sheep have huge horns much prized by hunters.

Plants and Animals of the Tropical Zone. — Contrast the life in the frozen North and the arid West with that in Central America and southern Mexico. In these regions, which are situated in the torrid zone, the temperature is always warm; and the rainfall, especially on the eastern coast, is so heavy that all the conditions are favorable for dense vegetation.

Indeed, the tangle of growth in the forests is so great that it is practically impossible to pass through it without hewing one's way. Besides trees and underbrush, there are quantities of ferns, vines, and flowers, many of which hang from the trees with their roots in the air instead of in the ground. These odd plants are able to live this way on account of the damp air. Among the trees are the valuable rosewood, mahogany, ebony, and rubber tree; and among the flowers are the beautiful orchids. On account of the continual warmth and moisture, many plants, like the banana for instance, bear fruit throughout the year.

In the midst of such luxuriant vegetation, animal life is wonderfully varied and abundant. There are the tapir, monkey, and jaguar (Fig. 233); brilliantly colored birds, such as parrots, paroquets, and humming birds; and millions of insects. Scorpions and centipedes abound, and ants exist in countless numbers, some in the ground, others in decayed vegetation. Serpents, some of them poisonous, are common in the forests; and in the rivers are fish and alligators, the latter being found as far north as Florida and Louisiana.

The plants and animals of the torrid zone are well adapted to their surroundings, like those of the Arctic and the desert. The jaguar and ocelot are speckled, or spotted, like a surface upon which the sunlight plays when it has struck through deep shade; the brown alligator is in color much like the mud banks on which he lies; and all the brilliantly colored animals are in harmony with the intense lights and the bright hues of tropical plants. This resemblance to their surroundings aids them in hiding, whether from their own enemies, or from the creatures which they are seeking for food.

Plants and Animals in the Temperate Part of North America. — Between the frigid and torrid zones, and both east and west of the arid region, is an area of *moderate* rainfall and temperature where the vegetation and animals differ from those of the other sections. Beginning in the warm South and passing northward, we find that both animals and plants grow less numerous and less varied until, near the Arctic zone, they become scarce and few in kind. The pines and oaks of the United States give place to the spruce, balsam fir, and maple in Canada; then these gradually become stunted and disappear (Fig. 234), and beyond this the barrens are reached.

FIG. 233.

A few of the animals of the tropical forests.

The animals that once inhabited the broad temperate zone have been mostly destroyed, although some still live in the forest and mountain region. They are carefully protected by state laws, which prohibit shooting except at certain seasons, and then only in small numbers. When America was first visited by Europeans, these woods abounded in deer, moose, caribou, wolves, and foxes (Fig. 235). Beavers built dams across the streams, the mink and otter fished in the waters, and bears roamed at will.

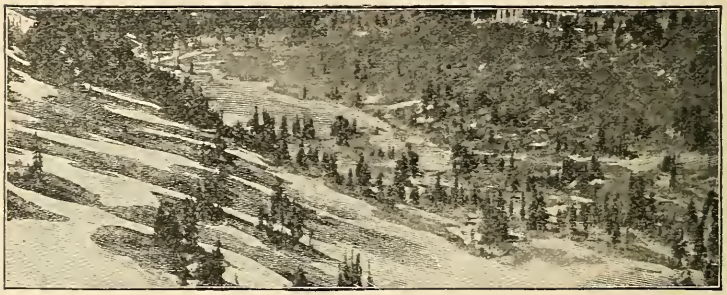

FIG. 234.

Appearance of the trees at the tree line, both on the slopes of mountains and near the Arctic zone.

Among the birds, the eagle was common (Fig. 235), and wild pigeons and turkeys were so abundant that they were one of the principal foods of the early settlers.

Some believe that at one time most of eastern United States was wooded, including the fertile prairies of the Mississippi Valley, from which the trees were burned by fires set by the Indians. Grass then sprang up in place of the trees, and the prairies became the grazing place for immense herds of bison (Fig. 236). The bison, however, like the other animals mentioned, have been mostly destroyed; thousands upon thousands were slaughtered for their hides and tongues alone, and

FIG. 235.

Some of the animals of northeastern United States and southeastern Canada.

their bones left to whiten upon the plains. There are now no wild bison in the United States, except a few which are protected by the government in the Yellowstone National Park. In this Park, where hunting is prohibited, are numbers of deer

Fig. 236.

One of the immense herds of bison that formerly roamed over the treeless plains.

and elk (Fig. 232). There are also black, cinnamon, and grizzly bears, which are so tame that they come down to the hotels at night to feed upon the garbage.

LATITUDE AND LONGITUDE

Need of a Means for Locating Places. — You have doubtless noticed that it has frequently been necessary to refer to lines upon the earth, such as the Tropic of Cancer, the Equator, the Arctic Circle, etc., in order to locate certain places and the boundaries of the zones. But these lines are far apart, and there are many places between them to which reference must often be made. For instance, suppose we wished to state on what part of the earth London is situated; how could it be done? Of course, by taking a long time, it would be possible to describe just where this city is; but cannot some more convenient way be devised?

The difficulty is much the same as that which arises in a large city. There are thousands of houses in the city, as there are thousands of towns and cities in the world. No one person knows who lives in most of them, and if a stranger were looking for a friend, he might have much trouble in finding him.

The Streets of a City. — In this case the problem may be solved in a simple manner. A street running east and west may be selected to divide the city into two parts (Fig. 237). Any place north of this street is spoken of as being on the north side, and south of it as being on the south side. The streets to the north and south are numbered from

this, as North 1st, North 2d, North 3d; and South 1st, South 2d, South 3d, and so on. Then if a man says that he lives on North 4th Street, one knows immediately that he lives on the north side, and that his house is on the 4th street from this central one.

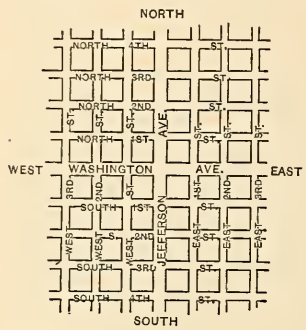

FIG. 237.

Map of a part of a city, to illustrate the need of naming streets.

But a city also extends a long distance east and west, and we need to know on what part of 4th street this house is to be found. To answer that question, another street running north and south, and crossing the east and west ones, may be selected to divide the city into east and west parts. The streets on the two sides are numbered from this one, as East 1st, East 2d, West 1st, West 2d, etc. (Fig. 237).

Then if a man lives on the corner of North 4th and East 3d streets, one knows not only that his home is *north* of a certain line, but *east* of another line. If the blocks, or the space between any two streets, are always the same, it will also be easy to tell the distance from each of the central streets to the house.

This plan is not necessary in small towns and villages, because the people there know one another, and are able to direct strangers easily. Few, if any, cities follow *exactly* the scheme here given; but many have a system of naming or numbering streets somewhat similar to this.

If you live in a large city, perhaps you can tell just how your streets are named or numbered.

Distance North and South of the Equator (*Latitude*). — Places upon a globe are located in much this manner. For example, the equator, which extends around the earth midway between the poles, corresponds to the dividing street running east and west. The distance between the equator and the poles, on either side, is divided into ninety parts (Fig. 238), corresponding, we might say, to the blocks in a city. These, however, are each about sixty-nine miles wide and are called *degrees*, marked with the sign °.

In making maps people think of a line, or a circle, extending around the earth sixty-nine miles north of the equator, and called a *circle of latitude*. Any point upon it is one degree (1°) north of the equator, or 1° *North Latitude* (abbreviated to N. Lat.). Similar lines are imagined 2°, 3°, and so on up to 90°, or to the north pole.

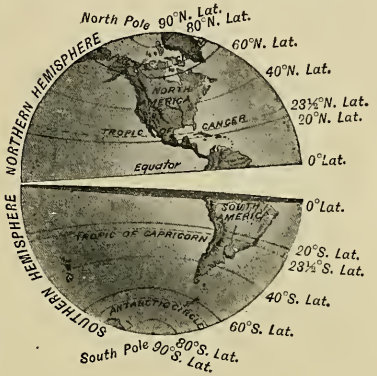

FIG. 238.

The globe, showing the two hemispheres and some of the circles of latitude.

Since all points on any one of these circles are the same distance from the equator, and from the other circles of latitude, the lines are *parallel;* and on that account they are called *parallels of latitude*. See a globe.

The same plan is followed on the south side, places in that hemisphere being in *South Latitude* (S. Lat.).

If one finds that a certain place is on the 8th, or the 50th, or some other parallel north of the equator, he

knows how far it is north of the equator. San Francisco is close to the 38th parallel, Chicago close to the 42d, and St. Paul on the 45th (Figs. 148 and 157). Knowing this, it is easy to see that Chicago is 4°, or about two hundred and seventy-six miles, farther north than San Francisco, while St. Paul is 3°, or over two hundred miles, farther north than Chicago.

Of course there are no marks *upon the earth* to show where these lines run, but they are of great use *on maps*, because they help us to locate places. Small maps and globes cannot well show the entire ninety parallels on each side of the equator, so that usually only every fifth or tenth one is drawn. Examine some maps (such as Figs. 123 and 125), to see which ones are given. Near what parallel do you live?

In learning of the seasons it will be found that on June 21 the vertical rays of the sun reach farthest north. The part of the earth which they reach is $23\frac{1}{2}°$ north of the equator, and is marked on the maps by the Tropic of Cancer (Fig. 238). The Tropic of Capricorn is the same distance south of the equator (Fig. 238).

Knowing now the length of a degree, you can find the width of the tropical zone, both in degrees and in miles. What is it? New Orleans is just south of the 30th parallel N. Lat. How far is it from the tropical zone?

On the day that the vertical rays of the sun reach farthest north, the entire Arctic Circle is lighted by the sun at midnight. This circle is the same distance from the pole as the Tropic of Cancer from the equator, that is $23\frac{1}{2}°$. The Antarctic Circle is the same distance from the south pole.

From this it is evident that we can easily find the lati-

tude of a given place by the help of these parallels, for *latitude is the distance north or south of the equator.*

East and West Distances on the Earth (*Longitude*[1]). — But how about distance east and west? It is twenty-five thousand miles around the earth at the equator, and some means must be found for telling on the map how far places are from each other in these directions.

Imaginary lines are used for this purpose, as before; but this time they extend north and south from pole to pole (Fig. 239), and are called *meridians*, or lines of *longitude*. In the case of the city it makes little difference what north and south street is chosen from which to number the others. It is only necessary that a certain one be *agreed upon*.

FIG. 239.

The earth, cut in halves along the Greenwich meridian, showing some of the meridians. The meridian 20° is usually considered the dividing line between the eastern and western hemispheres.

It is the same with these meridians. No one is especially important, as the equator is, and consequently different nations have selected different lines to start from. In France the meridian extending through Paris is chosen, in England that through Greenwich near London, and in America the one passing through Washington is sometimes used. But it is im-

[1] The ancients thought that the world extended farther in an east and west than in a north and south direction. Therefore they called the east and west, or *long* direction, longitude; the north and south direction, latitude.

portant that all people agree on some one, so that all maps may be made alike. On that account many countries start their numbering with the meridian which passes through Greenwich. The maps in this book follow that plan.

In Greenwich is a building, called an observatory, in which there is a telescope for the study of the sun, moon, and stars. As these heavenly bodies are of great help in finding the latitude and longitude of places, Greenwich seemed to the English a fitting place from which to begin numbering their meridians.

FIG. 240.

A view, looking down on the north pole, to show how the meridians come to a point at the north pole. Notice that if the 0° meridian were continued it would unite with the meridian 180°.

Commencing with this meridian as 0° longitude, people measure off degrees both east and west of it, and think of lines as extending north and south toward the poles, as they do of circles of latitude running parallel to the equator. Thus there is a meridian 1° west, another 2°, a third 3°, etc. Going eastward, they number 1°, 2°, 3°, in the same way.

Any place on the 3d meridian west of Greenwich is said to be in 3° *West Longitude* (W. Long.); if on the 60th meridian, 60° W. Long. Any place on the 20th meridian east of Greenwich is in 20° *East Longitude* (E. Long.). New York is 74° W. Long., while San Francisco is about 123° W. Long. Jerusalem is about 35° E. Long.

Knowing the latitude and longitude of any place, it

can, by the aid of a map, be as easily located as a house in a great city. For instance, Denver is about 40° N. Lat. and 105° W. Long. It is therefore far to the north and west of New Orleans, which is about 30° N. Lat. and 90° W. Long.

Find the latitude and longitude of some of the large cities on the map (Fig. 124). Notice also that only every fifth meridian is marked. Compare this with the map of New England (Fig. 125). Since this map represents a smaller section of country, more meridians can be drawn upon it.

The circles of latitude are parallel to the equator and to each other, as you can prove by measuring the distance between them on a globe. But the meridians cannot be parallel on a globe, since they start from the poles and spread farther and farther apart until the equator is reached. Examine some of the maps in this book to see that the meridians are not parallel, while the lines of latitude are.

Fig. 241.

An orange with a part of the peeling removed to show how the lines converge toward the poles, as the meridians converge on the globe.

You can see how this is by taking the peeling from an orange (Fig. 241). The edges of each of the quarters spread far apart in the middle, or equator, but come together at the ends, or poles, of the orange.

A degree of longitude is a little over sixty-nine miles at the equator; but it decreases more and more as the poles are approached, until at the poles it is nothing, because all the meridians meet there at one point. Examine Figure 240, or, better still, a globe, to see that this must be true.

THE HUMAN RACE

Divisions of Mankind

Man, like plants and animals, varies in different parts of the world. He is influenced by his surroundings, as they are, and in the course of time has developed differently in the various lands of the earth. Concerning the *origin* of the human race, and its divisions, people hold different views; but mankind in general may be divided into four great groups.

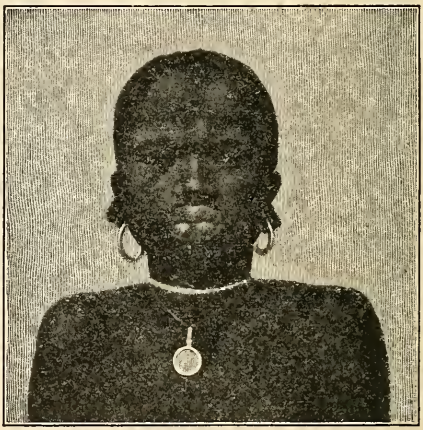

Fig. 242.
An African negro girl.

Ethiopians. — Altogether there are about one and one-half billion human beings upon the earth, or twenty times the number in the United States. Of these the lowest are the negroes (Fig. 242) or *Ethiopians*, who number about one hundred and seventy-five million. This is often called the *black race*. There are many subdivisions of this group, but they are all characterized by a deep brown or black skin, short, black, woolly hair, broad flat noses, and prominent cheek bones.

The home of the Ethiopians is Africa south of the Sahara desert (Fig. 214), though many have been transported to other lands as slaves, and have there mingled more or less with the other races. In their original home the negroes are savages, or barbarians of low type.

The native Australians (Fig. 243), the Papuans of New Guinea, the Negritos of the Philippines, and the blacks on some other islands in that part of the world resemble the negroes most closely, though differing from them in some important respects. They are shorter, for example, their hair is less woolly, their noses straighter, and their lips less thick.

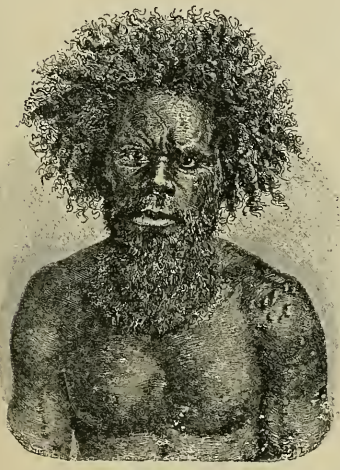

Fig. 243.
A native of New South Wales, Australia.

American Indians. — A second great division of the human race is that of the *red men* or *American Indians*, often called the *red race*. It is the smallest of the four groups, numbering about twenty-two million. These people, who in some respects resemble the Mongolian race, were in possession of both North and South America when Columbus discovered America. They were, however, divided into many tribes. While the Indians have been largely displaced by white men, many, especially in the tropic and Antarctic zones, are still living in the savage state.

They are distinguished by a copper-colored skin, prominent cheek bones, black eyes, and long, coarse black hair. When discovered many were savages, while others had risen to the stage of barbarism. In fact, the Aztecs of North America and the Incas of South America had even developed some of the arts of civilization.

Fig. 244.
South American Indians.

Mongolians. — The third division, the *Mongolian* or *yellow race*, numbering about five hundred and forty million, are typically Asiatic people, the greater number being found in Asia and the islands of the Pacific (Fig. 245). Some, as the Finns, Lapps, and Turks, have settled in Europe, while the Eskimos have spread eastward along the shores of Arctic America.

The Mongolians, typically represented by the Chinese and Japanese (Fig. 245), have a yellowish and in some cases even a white skin, prominent cheek bones, small oblique eyes, a small nose, and long, coarse black hair. In places, as on the more remote islands, the Mongolians are uncivilized; but the great majority may be classed as

civilized people, although their standard of civilization differs from that of the white race.

Caucasians. — By far the largest and most civilized of the four divisions of mankind is the *white* or *Caucasian*

FIG. 245.
Japanese ladies.

race, which numbers about seven hundred and seventy million. Their original home is not known. Some believe it to have been in the plateau of central Asia, others in the northern part of Africa. With the dawn of history the white peoples of Europe were mostly barbarians;

but civilization had begun to develop in southern and western Asia and along the shores of the Mediterranean Sea.

At present the white race occupies most of Europe, North and South America, Australia, and large portions of Asia and Africa. It is the most widely distributed of any of the four divisions. Besides Europeans (Fig. 246) it includes the Egyptians, Arabs, and Abyssinians of Africa; also the Arabs, Persians, Armenians, Afghans, and Hindus of Asia (Fig. 247).

Fig. 246.
A Belgian peasant girl.

While for various reasons the Caucasians differ greatly in characteristics, two main branches are recognized: (1) the fair type (Fig. 246), with florid complexion, light brown, flaxen, or red hair, blue or gray eyes, and height above the average; (2) the dark type (Fig. 247), with fair skin, dark brown and black hair, often wavy or curly, and black eyes. In temperament both are active, enterprising, and imaginative, though the fair type is more solid, the dark type more emotional.

Distribution of Races. — For centuries these four great divisions of the human race have been changing within themselves until there are now many subdivisions of

each group. By war and invasion they have encroached upon one another, and have intermixed to some extent. But the leaders are the whites, who, having learned the use of ships in exploring distant lands, have spread with

FIG. 247.

A group of Indian Brahmins, who belong to the dark type of Caucasians.

a rapidity never seen before. Also, being more advanced than the others, the white races have readily conquered the weaker people and taken their lands from them. They now dominate the whole world, the only division that has held out against them being the Mongolians, whose very numbers have in large measure served to protect them.

APPENDIX

CONTINENTS AND PRINCIPAL COUNTRIES

NOTE. — The figures 1897, 1901, etc., refer to the year in which the estimate was made. Most of the figures are obtained from the "Statesman's Year Book" for 1902, or from the "Century Atlas."

	Area in Square Miles		Population
NORTH AMERICA	**8,843,070**	**1900**	**103,500,000**
United States (with Alaska)	3,616,484	1900	76,149,386
Mexico	767,005	1900	13,545,462
Canada	3,653,946	1901	5,369,666
Central America	181,523	1900	4,015,369
Cuba	41,655	1899	1,572,797
SOUTH AMERICA	**7,681,420**	**1900**	**41,200,000**
Brazil	3,209,878	1892	18,000,000
Argentina	1,113,849	1900	4,794,149
Peru	695,733	1896	4,609,999
Chile	279,901	1895	2,712,145
EUROPE	**3,855,828**	**1900**	**376,400,000**
Russia	2,095,616	1900	106,264,136
German Empire	208,830	1900	56,367,178
Austria-Hungary	264,204	1900	46,810,981
France	204,092	1901	38,641,333
British Isles	120,979	1901	41,605,323
Italy	110,646	1901	32,449,754
Spain	197,670	1897	18,089,500
Turkey in Europe	65,752	1901	6,086,300
ASIA (with East Indies)	**16,770,951**	**1900**	**877,000,000**
Chinese Empire	4,234,910	1901	399,680,000
India	1,559,603	1901	294,266,701
Japan	161,198	1898	46,453,249
Turkey in Asia	650,394	1901	17,545,300
Siberia	4,833,496	1897	5,727,090
AFRICA	**11,508,793**	**1900**	**170,000,000**
Kongo State	900,000	1901	30,000,000
Egypt	400,000	1901	9,821,045
Cape Colony	276,775	1901	2,350,000
Transvaal Colony	119,140	1901	1,094,100

	Area in Square Miles		Population
AUSTRALIA	**2,972,573**	**1901**	**3,767,443**
New South Wales	310,367	1901	1,352,297
Victoria	87,884	1901	1,200,918
Queensland	668,497	1901	503,266
South Australia	903,690	1901	362,604
Tasmania	26,215	1901	172,475
Western Australia	975,920	1901	182,553

SIZE OF THE EARTH

LENGTH OF THE EARTH'S DIAMETER at equator (miles)	7,926
LENGTH OF THE EQUATOR (miles)	24,902
THE EARTH'S SURFACE (square miles)	**196,940,000**
Pacific Ocean (square miles)	55,660,000
Atlantic Ocean (square miles)	33,720,000
Antarctic Ocean and the great southern sea surrounding the south pole (square miles)	30,605,000
Indian Ocean (square miles)	16,720,000
Arctic Ocean (square miles)	4,781,000
The sea (square miles)	**141,486,000**

AREA AND POPULATION OF THE UNITED STATES

	Area in Square Miles	Population, 1900
Alabama	52,250	1,828,697
Alaska	590,884	63,592
Arizona	113,020	122,931
Arkansas	53,850	1,311,564
California	158,360	1,485,053
Colorado	103,925	539,700
Connecticut	4,990	908,355
Delaware	2,050	184,735
District of Columbia	70	278,718
Florida	58,680	528,542
Georgia	59,475	2,216,331
Guam	180	(1887) 8,561
Hawaiian Islands	6,449	154,001
Idaho	84,800	161,772
Illinois	56,650	4,821,550
Indiana	36,350	2,516,462
Indian Territory	31,400	391,960
Iowa	56,025	2,231,853
Kansas	82,080	1,470,495
Kentucky	40,400	2,147,174
Louisiana	48,720	1,381,625

	Area in Square Miles	Population, 1900
Maine	33,040	694,466
Maryland	12,210	1,190,050
Massachusetts	8,315	2,805,346
Michigan	58,915	2,420,982
Minnesota	83,365	1,751,394
Mississippi	46,810	1,551,270
Missouri	69,415	3,106,665
Montana	146,080	243,329
Nebraska	77,510	1,068,539
Nevada	110,700	42,335
New Hampshire	9,305	411,588
New Jersey	7,815	1,883,669
New Mexico	122,580	195,310
New York	49,170	7,268,012
North Carolina	52,250	1,893,810
North Dakota	70,795	319,146
Ohio	41,060	4,157,545
Oklahoma	39,030	398,245
Oregon	96,030	413,536
Pennsylvania	45,215	6,302,115
Philippine Islands	114,356	(1901) 8,000,000
Porto Rico	3,550	(1899) 953,243
Rhode Island	1,250	428,556
South Carolina	30,570	1,340,316
South Dakota	77,650	401,570
Tennessee	42,050	2,020,616
Texas	265,780	3,048,710
Tutuila	55	(1891) 3,750
Utah	84,970	276,749
Vermont	9,565	343,641
Virginia	42,450	1,854,184
Washington	69,180	518,103
West Virginia	24,780	958,800
Wisconsin	56,040	2,069,042
Wyoming	97,890	92,531

TWENTY-FIVE LARGEST CITIES OF THE UNITED STATES

NOTE. — The great increase in size of New York is due to the joining of Brooklyn and other cities to it, making Greater New York.

	Population, Census of 1900	Population, Census of 1890
1. New York, N.Y.	3,437,202	1,515,301
2. Chicago, Ill.	1,698,575	1,099,850

	Population, Census of 1900	Population, Census of 1890
3. Philadelphia, Pa.	1,293,697	1,046,964
4. St. Louis, Mo.	575,238	451,770
5. Boston, Mass.	560,892	448,477
6. Baltimore, Md.	508,957	434,439
7. Cleveland, O.	381,768	261,353
8. Buffalo, N.Y.	352,387	255,664
9. San Francisco, Cal.	342,782	298,997
10. Cincinnati, O.	325,902	296,908
11. Pittsburg, Pa.	321,616	238,617
12. New Orleans, La.	287,104	242,039
13. Detroit, Mich.	285,704	205,876
14. Milwaukee, Wis.	285,315	204,468
15. Washington, D.C.	278,718	230,392
16. Newark, N.J.	246,070	181,830
17. Jersey City, N.J.	206,433	163,003
18. Louisville, Ky.	204,731	161,129
19. Minneapolis, Minn.	202,718	164,738
20. Providence, R.I.	175,597	132,146
21. Indianapolis, Ind.	169,164	105,436
22. Kansas City, Mo.	163,752	132,716
23. St. Paul, Minn.	163,065	133,156
24. Rochester, N.Y.	162,608	133,896
25. Denver, Col.	133,859	106,713

CITIES OF THE UNITED STATES AND ITS DEPENDENCIES MENTIONED IN THIS BOOK

	Population, Census of 1900	Population, Census of 1890
Albany, N.Y.	94,151	94,923
Allegheny, Pa.	129,896	105,287
Annapolis, Md.	8,402	7,604
Atlanta, Ga.	89,872	65,533
Baltimore, Md.	508,957	434,439
Bangor, Me.	21,850	19,103
Birmingham, Ala.	38,415	26,178
Boston, Mass.	560,892	448,477
Bridgeport, Conn.	70,996	48,866
Buffalo, N.Y.	352,387	255,664
Butte, Mont.	30,470	10,723
Cambridge, Mass.	91,886	70,028
Camden, N.J.	75,935	58,313
Charleston, S.C.	55,807	54,955

	Population, Census of 1900	Population, Census of 1890
Chattanooga, Tenn.	32,490	29,100
Chicago, Ill.	1,698,575	1,099,850
Cincinnati, O.	325,902	296,908
Cleveland, O.	381,768	261,353
Columbus, O.	125,560	88,150
Dallas, Tex.	42,638	38,067
Denver, Col.	133,859	106,713
Detroit, Mich.	285,704	205,876
Duluth, Minn.	52,969	33,115
Fall River, Mass.	104,863	74,398
Galveston, Tex.	37,789	29,084
Gloucester, Mass.	26,121	24,651
Grand Rapids, Mich.	87,565	60,278
Harrisburg, Pa.	50,167	39,385
Hartford, Conn.	79,850	53,230
Havana, Cuba	235,981 (1899)	——
Honolulu	39,306	——
Indianapolis, Ind.	169,164	105,436
Jacksonville, Fla.	28,429	17,201
Jersey City, N.J.	206,433	163,003
Kansas City, Mo.	163,752	132,716
Knoxville, Tenn.	32,637	22,535
Lawrence, Mass.	62,559	44,654
Los Angeles, Cal.	102,479	50,395
Louisville, Ky.	204,731	161,129
Lowell, Mass.	94,969	77,696
Lynn, Mass.	68,513	55,727
Manchester, N.H.	56,987	44,126
Manila, Philippines	350,000 (1901)	——
Memphis, Tenn.	102,320	64,495
Milwaukee, Wis.	285,315	204,468
Minneapolis, Minn.	202,718	164,738
Mobile, Ala.	38,469	31,076
Newark, N.J.	246,070	181,830
New Bedford, Mass.	62,442	40,733
New Haven, Conn.	108,027	81,298
New Orleans, La.	287,104	242,039
New York, N.Y.	3,437,202	1,515,301
Norfolk, Va.	46,624	34,871
Ogden, Utah	16,313	14,889
Omaha, Neb.	102,555	140,452
Paterson, N.J.	105,171	78,347
Pensacola, Fla.	17,747	11,750
Philadelphia, Pa.	1,293,697	1,046,964
Pittsburg, Pa.	321,616	238,617

	Population, Census of 1900	Population, Census of 1890
Portland, Me.	50,145	36,425
Portland, Ore.	90,426	46,385
Providence, R.I.	175,597	132,146
Pueblo, Col.	28,157	24,558
Reading, Pa.	78,961	58,661
Richmond, Va.	85,050	81,388
Rochester, N.Y.	162,608	133,896
Rutland, Vt.	11,499	11,760
Saginaw, Mich.	42,345	46,322
St. Louis, Mo.	575,238	451,770
St. Paul, Minn.	163,065	133,156
Salt Lake City, Utah	53,531	44,843
San Francisco, Cal.	342,782	298,997
Savannah, Ga.	54,244	43,189
Scranton, Pa.	102,026	75,215
Seattle, Wash.	80,671	42,837
Sitka, Alaska	1,396	1,190
Spokane, Wash.	36,848	19,922
Springfield, Mass.	62,059	44,179
Syracuse, N.Y.	108,374	88,143
Tacoma, Wash.	37,714	36,006
Tampa, Fla.	15,839	5,532
Toledo, O.	131,822	81,434
Trenton, N.J.	73,307	57,458
Troy, N.Y.	60,651	60,956
Vicksburg, Miss.	14,834	13,373
Washington, D.C.	278,718	230,392
Wheeling, West Va.	38,878	34,522
Wilkes Barre, Pa.	51,721	37,718
Wilmington, Del.	76,508	61,431
Wilmington, N.C.	20,976	20,056
Worcester, Mass.	118,421	84,655

TWENTY-FIVE LARGEST CITIES OF THE WORLD

	Population
1. London, England, 1901	4,536,063
Greater London, 1901	6,580,616
2. New York, United States, 1900	3,437,202
3. Paris, France, 1901	2,660,559
4. Canton, China, 1898	2,500,000
5. Berlin, Germany, 1900	1,888,326
6. Chicago, United States, 1900	1,698,575
7. Vienna, Austria-Hungary, 1900	1,674,957

		Population
8.	Tokio, Japan, 1898	1,440,121
9.	Philadelphia, United States, 1900	1,293,697
10.	St. Petersburg, Russia, 1897	1,267,023
11.	Constantinople, Turkey, 1901	1,125,000
12.	Calcutta, India, 1901	1,121,664
13.	Moscow, Russia, 1897	988,614
14.	Tientsin, China, 1898	950,000
15.	Peking, China, 1898	900,000
16.	Buenos Aires, Argentina, 1900	821,291
17.	Hankau, China, 1897	800,000
18.	Bombay, India, 1901	770,843
19.	Glasgow, Scotland, 1901	735,906
20.	Hamburg, Germany, 1900	705,738
21.	Hangchau, China, 1897	700,000
22.	Liverpool, England, 1901	684,947
23.	Fuchau, China, 1897	650,000
24.	Warsaw, Poland, 1897	638,209
25.	St. Louis, United States, 1900	575,238

IMPORTANT FOREIGN CITIES

	Population
Adelaide, South Australia, 1901	160,691
Alexandria, Egypt, 1897	319,766
Amsterdam, Netherlands, 1900	520,602
Antwerp, Belgium, 1900	285,600
Athens, Greece, 1896	111,486
Bangkok, Siam, 1898	250,000
Barcelona, Spain, 1897	509,589
Belfast, Ireland, 1901	348,876
Berlin, Germany, 1900	1,888,326
Berne, Switzerland, 1901	64,864
Birmingham, England, 1901	522,182
Bombay, India, 1901	770,843
Bordeaux, France, 1901	257,471
Brussels, Belgium, 1901	561,782
Budapest, Austria-Hungary, 1900	732,322
Buenos Aires, Argentina, 1900	821,291
Cairo, Egypt, 1897	570,062
Calcutta, India, 1901	1,121,664
Callao, Peru, 1901	16,000
Canton, China, 1900	2,500,000
Cape Town, Cape Colony, 1891	51,251
Caracas, Venezuela, 1894	72,429

	Population
Christiania, Norway, 1897	200,000
Constantinople, Turkey, 1901	1,125,000
Copenhagen, Denmark, 1901	378,235
Dresden, Germany, 1900	395,349
Dublin, Ireland, 1901	286,328
Edinburgh, Scotland, 1901	316,479
Geneva, Switzerland, 1901	105,139
Glasgow, Scotland, 1901	735,906
Hague, The, Netherlands, 1900	212,211
Halifax, Nova Scotia, 1901	40,787
Hamburg, Germany, 1900	705,738
Havre, France, 1901	129,014
Hongkong, China, 1901	297,312
Jerusalem, Turkey in Asia, 1901	42,000
Johannesburg, Transvaal Colony, 1896	102,078
Kimberley, Cape Colony, 1891	28,718
Leipzig, Germany, 1900	455,089
Lima, Peru, 1891	103,956
Lisbon, Portugal, 1900	357,000
Liverpool, England, 1901	684,947
London, England, 1901	4,536,063
London, Greater, 1901	6,580,616
Lyon, France, 1901	453,145
Madras, India, 1901	509,397
Madrid, Spain, 1897	512,150
Malaga, Spain, 1897	125,579
Manchester, England, 1901	543,969
Marseille, France, 1901	494,769
Mecca, Turkey in Asia, 1900	60,000
Melbourne, Victoria, 1901	493,956
Mexico, Mexico, 1895	344,377
Milan, Italy, 1901	491,460
Mocha, Turkey in Asia, 1900	5,000
Montevideo, Uruguay, 1897	249,251
Montreal, Canada, 1901	266,826
Moscow, Russia, 1897	988,614
Munich, Germany, 1900	499,959
Naples, Italy, 1901	563,731
Odessa, Russia, 1897	405,041
Ottawa, Canada, 1901	59,902
Para, Brazil, 1892	65,000
Paris, France, 1901	2,660,559
Peking, China, 1898	900,000
Prague, Austria-Hungary, 1900	201,589
Quebec, Canada, 1901	68,834
Rio de Janeiro, Brazil, 1890	522,651

	Population
Rome, Italy, 1901	463,000
St. John, New Brunswick, 1901	40,711
St. Petersburg, Russia, 1897	1,267,023
Santiago, Chile, 1900	291,725
Shanghai, China, 1900	620,000
Singapore, Malay Peninsula, 1901	228,555
Stockholm, Sweden, 1900	300,624
Sydney, New South Wales, 1900	451,000
Teheran, Persia, 1897	210,000
Tientsin, China, 1897	950,000
Tokio, Japan, 1898	1,440,121
Toronto, Canada, 1901	207,971
Trieste, Austria-Hungary, 1900	134,143
Valparaiso, Chile, 1900	135,674
Vancouver, Canada, 1901	26,196
Venice, Italy, 1901	151,841
Vera Cruz, Mexico, 1895	88,993
Victoria, Canada, 1901	20,821
Vienna, Austria-Hungary, 1900	1,674,957
Warsaw, Poland, 1897	638,209
Winnepeg, Canada, 1901	42,336
Yokohama, Japan, 1898	193,762
Zürich, Switzerland, 1901	152,942

HEIGHT OF A FEW MOUNTAIN PEAKS

	Feet
Mt. Everest, Himalaya Mountains, Asia	29,002
Aconcagua, Andes Mountains, Chile	22,860
Mt. McKinley, Alaskan Mountains, Alaska	20,464
Mt. Logan, Coast Ranges, Canada	19,500
Mt. Elburz, Caucasus Mountains, Russia	18,200
Orizaba, Sierra Madre, Mexico	18,314
Mt. St. Elias, Coast Ranges, Alaska	18,100
Mt. Blanc, Alps Mountains, France	15,781
Mt. Whitney, Sierra Nevada Mountains, California	14,898
Mt. Rainier, Cascade Mountains, Washington	14,526
Mt. Shasta, Cascade Mountains, California	14,380
Pikes Peak, Rocky Mountains, Colorado	14,108
Mauna Loa, Hawaiian Islands	13,675
Fremont Peak, Rocky Mountains, Wyoming	13,790
Fujiyama, Japan	12,365
Mt. Mitchell, Appalachian Mountains, North Carolina	6,711
Mt. Washington, White Mountains, New Hampshire	6,293
Mt. Marcy, Adirondacks, New York	5,344

SOME OF THE LARGEST RIVERS OF THE WORLD

Name	Country	Length in Miles	Basin Area	Ocean
Missouri-Mississippi	United States	4,300	1,257,000	Atlantic
Nile	Africa	3,400	1,273,000	Atlantic
Amazon	South America	3,300	2,500,000	Atlantic
Ob	Siberia	3,200	1,000,000	Arctic
Yangtse Kiang	China	3,200	548,000	Pacific
Kongo	Africa	2,900	1,200,000	Atlantic
Lena	Siberia	2,800	950,000	Arctic
Hoang-Ho	China	2,700	570,000	Pacific
Niger	Africa	2,600	563,300	Atlantic
Plata	South America	2,580	1,200,000	Atlantic
Mackenzie	Canada	2,000	590,000	Arctic
Volga	Russia	2,400	563,300	Caspian
St. Lawrence	North America	2,200	519,000	Atlantic
Yukon	Alaska	2,000	440,000	Pacific
Indus	India	1,800	372,700	Indian
Danube	Europe	1,770	300,000	Atlantic

TEN OF THE GREAT LAKES OF THE WORLD

Name	Length in Miles	Breadth in Miles	Area in Square Miles	Country
Caspian	680	270	169,000	Russia
Superior	390	160	31,200	U.S. and Canada
Victoria Nyanza	230	220	30,000	Africa
Aral	225	185	26,900	Asiatic Russia
Huron	250	100	17,400	U.S. and Canada
Michigan	335	85	20,000	United States
Tanganyika	420	50	12,650	Africa
Baikal	397	45	12,500	Siberia
Erie	250	58	10,000	U.S. and Canada
Chad (a shallow lake which grows very large in the rainy season and shrinks in the dry season)			about 10,000	Africa

APPROXIMATE AVERAGE HEIGHT OF SOME PLATEAUS

	Feet
Tibet	10–15,000
Bolivia	10–13,000
Spain	2,000–3,000
Mexico	5–6,000
Western United States Plateau	5–6,000
Brazil	2,000–2,500

INDEX OF PLACES AND PRONOUNCING VOCABULARY.

KEY TO PRONUNCIATION.

a, as in *fat*; *ā*, as in *fate*; *ä*, as in *far*; *â*, as in *fall*; *e*, as in *pen*; *ē*, as in *mete*; *ė*, as in *her*; *i*, as in *pin*; *ī*, as in *pine*; *o*, as in *not*; *ō*, as in *note*; *ö*, as in *move*; *u*, as in *tub*; *ū*, as in *mute*; *u*, as in *pull*; *g*, as in *get*; *ġ*, as in *gem*; *c*, as in cat; *ç*, as in *cent*.

A double dot under a or o (ạ, ọ) indicates that its sound is shortened to that of *u* in *but*.

Italicized letters are silent. The sign ′ tells upon which syllable the accent is placed. The numbers refer to pages in the book excepting where Fig. is before them, when they refer to figures in the book.

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